

**Automobile Insurance Losses
Personal Injury Protection Coverages**

**CLAIM FREQUENCY RESULTS BY SIZE OF CLAIM
FOR 1977, 1978, AND 1979 MODELS**

Research Report HLDI I 79-1
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Summary

This Highway Loss Data Institute (HLDI) report presents the frequencies of claims for injuries to occupants of 1977, 1978, and 1979 model year passenger cars. Claim frequency results are presented for *all* medical claims and for medical claims exceeding \$250, \$500, and \$1,000. The results are based on the "no-fault" personal injury protection insurance loss experience of cars of the three model years from their introductions through December 1979.

Principal Findings

- Table 1 on page 4 summarizes the 1977 through 1979 models with the best injury loss experience. There were 24 individual vehicle series in Table 1 with at least one claim frequency result that was 30 percent or more below the average for all cars. Among these cars 18 were intermediate models, and most were station wagons or regular four-door models. There were only two models from the subcompact and compact size classes and both of these were station wagons. All 24 models were manufactured in the United States, 16 of them by General Motors.
- Table 2 on page 6 summarizes the 1977 through 1979 models with the worst injury loss experience. There were 22 series in Table 2 with at least one claim frequency result that was 30 percent or more above the average for all cars. All but two of these 22 series were subcompacts, primarily regular two-door models. Fifteen of the 22 were imported models.
- Among the cars with the best injury loss experience, the Oldsmobile Toronado had the lowest overall frequency (43 percent below average), and also the lowest frequency of claims exceeding \$250 (47 percent below average). The Chevrolet Caprice Station Wagon had the lowest frequency of claims greater than \$500 (37 percent below average).
- Among the cars with the worst injury loss experience the Datsun 200 SX had the highest overall frequency (71 percent above average) and the highest frequency of claims exceeding \$500 (56 percent above average). The Plymouth Arrow, manufactured in Japan by Mitsubishi, had the highest frequency of claims greater than \$250 (80 percent above average).
- There was a clear pattern of declining claim frequencies with increasing car size for subcompacts, compacts, and intermediates for all claim size categories. However, injury claim frequencies also varied greatly among cars in the same car size and body style groups.

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Introduction

The Highway Loss Data Institute (HLDI) is a non-profit, public service organization that gathers, processes, and publishes insurance data concerned with human and economic losses associated with motor vehicle use, and, especially, with the ways such losses vary among different kinds of vehicles.

This report compares the frequencies of claims for injuries to occupants of 1977, 1978, and 1979 model year passenger cars. In addition to the frequency of all paid and pending claims combined, separate claim frequencies are shown for claims in which the medical payments exceeded certain amounts — \$250, \$500, and \$1,000 — which represent progressively increased medical costs. The results are shown for individual vehicle series, and also by car size group and body style subgroup.*

The injury claim frequencies reported are based on counts of crashes involving at least one claim for medical expenses made under personal injury protection insurance coverages. A description of these first-party coverages, which principally insure against medical losses to occupants of the insured cars themselves, is given in Appendix A. The data analysis methods used in the preparation of this report are detailed in Appendix B. Definitions are given in Appendix C. The data used were supplied by nine insurers: Aetna Life and Casualty, Allstate, GEICO, Kemper, Nationwide, Prudential, State Farm, Travelers, and USAA.

This report is based on injury coverages and injury claims involving 1977 models in the calendar period September 1976 through December 1979, 1978 models in the period September 1977 through December 1979, and 1979 models in the period September 1978 through December 1979.

*Vehicle series designations by make and size class for series whose results are included in this report are given in HLDI reports R79-1, R78-1, and 177-1.

Results And Discussion

This report presents four separate injury claim frequency results for 1977-1979 model year cars with sufficient exposure — the frequency of all paid and pending claims combined, and the frequencies of paid claims exceeding \$250, \$500, and \$1,000, respectively. The last three frequencies allow comparisons among the types of cars with respect to the occurrence of injuries of increasing severities.

Each claim frequency result is presented in relative terms with 100 representing the result for all cars in each claim size category. Thus, comparisons among vehicles should be made either within a particular claim size category or by considering the sets of claim frequency results. It is important to keep in mind that the *relative* claim frequency results for the different claim size amounts are not directly comparable because each set of *relative* results is based on a different value of 100.

The actual frequencies of claims decreased rapidly with increasing medical costs. The frequency of claims exceeding \$250 was approximately one-third the overall frequency, the frequency of claims exceeding \$500 was about one-fourth the overall frequency, and the frequency of claims exceeding \$1,000 was less than one-sixth the overall frequency.

The total dollars paid out were dramatically influenced by the more expensive claims. Claims exceeding \$500, while representing only one-fourth of all claims, accounted for over 85 percent of the total dollars paid out. Similarly, claims exceeding \$250 accounted for about 92 percent of the total dollars, and claims exceeding \$1,000 accounted for roughly 75 percent of the total dollars.

The relative injury loss experience of particular vehicles should not change substantially from model year to model year providing that the basic design of the vehicle is essentially unchanged. (This is not as likely to be the case for losses involving vehicle damage, where parts price changes and minor cosmetic design changes between model years can substantially change the loss experience.) In view of this and because substantial amounts of exposure are needed to produce reliable injury claim frequency results, the data for model years 1977 through 1979 have been combined for those cars whose basic designs remained unchanged. The total exposure amassed by the three model years included in this report exceeded 5.6 million vehicle years.

Table 1 summarizes the individual 1977 through 1979 models with the best injury loss experience in terms of claim frequencies by size of claim. Any individual series whose claim frequency was at least 30 percent better (a relative claim frequency of 70 or less) than the all-car result for *any* of the claim size categories is listed. The exposure thresholds for reporting results were 5,000 years for the "all" results, 10,000 years for the greater than \$250 results, 15,000 years for the greater than \$500 results, and 25,000 years for the greater than \$1,000 results. The cars are ranked in increasing order of their overall relative claim frequency. Each individual relative claim frequency result which was 70 or less is shown in bold print.

The overall injury claim frequency of all 1977 through 1979 models combined was 18.2 claims per 1,000 insured vehicle years. The injury claim frequency was 6.8 for claims exceeding \$250, 4.5 for claims exceeding \$500, and 2.7 for claims greater than \$1,000.

There are 24 series of vehicles in Table 1 with at least one claim frequency result that was at least 30 percent better than average. These cars had the best injury loss experience among the 178 vehicle series from model years 1977 through 1979 with sufficient exposure to be summarized in Table 3. Together, the 24 models in Table 1 accounted for more than 10 percent of the total exposure. There were 18 intermediate models among the 24 cars with the best loss experience, most of them either station wagons or regular four-door models. There were only two models listed from the subcompact and compact classes, and both were station wagons; there were only two regular two-door models listed. All of the 24 models were manufactured in the United States, 16 of them by General Motors.

(Cont'd on page 5)

TABLE 1

1977-1979 MODELS WITH THE BEST LOSS EXPERIENCE
RELATIVE INJURY CLAIM FREQUENCIES — PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE & SERIES	BODY STYLE	CAR SIZE	EXPOSURE	RELATIVE CLAIM FREQUENCIES BY SIZE OF CLAIM			
					ALL	> \$250	> \$500	> \$1000
1977-1978	Oldsmobile Toronado	Spec.	FS	10,147	57	53		
1977-1978	Chrysler Newport	4-Dr.	FS	16,935	58	68	75	
1977-1979	Buick Estate	S.W.	I	11,172	62			
1977	Oldsmobile Custom Cruiser	S.W.	I	7,954	62			
1977	Buick Century	S.W.	I	5,132	62			
1977-1979	Oldsmobile Ninety Eight	4-Dr.	I	42,635	66	74	82	79
1977	Oldsmobile Cutlass	S.W.	I	10,594	66	60		
1977-1979	Mercury Cougar	4-Dr.	I	9,856	68			
1977-1979	Oldsmobile Delta 88	4-Dr.	I	75,550	68	66	69	76
1977-1979	Chevrolet Caprice	S.W.	I	29,116	68	64	63	69
1977-1979	Lincoln Continental—4-dr.	Spec.	FS	24,845	68	90	91	
1978-1979	Oldsmobile Cutlass	S.W.	C	13,204	69	73		
1978-1979	Chrysler LeBaron	S.W.	I	5,113	69			
1977-1978	Chrysler New Yorker	2-Dr.	FS	6,063	70			
1977-1979	Buick LeSabre	4-Dr.	I	60,533	73	69	68	70
1977-1979	Pontiac Catalina	4-Dr.	I	20,975	73	77	68	
1977-1979	Chevrolet Impala	S.W.	I	31,116	74	66	67	63
1977-1979	Cadillac Seville	Spec.	I	15,865	74	71	65	
1977-1979	American Pacer	S.W.	SC	14,073	75	68		
1977-1979	Pontiac Catalina	S.W.	I	12,190	75	63		
1977-1979	Pontiac Bonneville	2-Dr.	I	21,454	76	70	73	
1977-1979	Plymouth Volare	S.W.	I	64,299	79	70	72	69
1977	Buick Century	4-Dr.	I	15,478	82	78	68	
1977-1979	Plymouth Volare	4-Dr.	I	46,556	87	78	75	69

Results are standardized to the distribution:

Minimum exposure requirements for reporting:

<u>Youthful Operator</u>	<u>No Youthful Operator</u>
15%	85%

All claims	5,000 vehicle years
Claims > \$250	10,000 vehicle years
Claims > \$500	15,000 vehicle years
Claims > \$1,000	25,000 vehicle years

Those results at least 30 percent *below* the all-vehicle results (100) are shown in bold print.

The Oldsmobile Toronado had the lowest overall relative claim frequency (57) and the lowest frequency of claims exceeding \$250. The Chevrolet Caprice Station Wagon had the lowest frequency of claims greater than \$500.

Some cars, for example the four-door Oldsmobile Ninety Eight and the four-door Lincoln Continental, had relatively good overall claim frequencies but higher frequencies of large claims. Other cars, most notably the four-door Plymouth Volare, had higher overall claim frequencies but low rates of the larger claims.

There are other vehicle series which had lower overall claim frequencies than some of the cars listed in Table 1, but did not have relative claim frequencies of 70 or less for any of the claim size categories; the results for these cars are shown in Table 3.

Table 2 summarizes in similar fashion the individual 1977 through 1979 models with the worst injury loss experience. Any individual series whose claim frequency was at least 30 percent worse (a relative claim frequency of at least 130) than the all-car result for any of the claim size categories is listed. Exposure thresholds were the same as for Table 1. Cars are listed in decreasing order of their overall relative claim frequency.

There are 22 series in Table 2 and their combined exposure represents nearly 10 percent of the total for all models. All but two of the cars with the worst loss experience were subcompacts, primarily regular two-door models. The first eight and a total of 15 of the 22 were imported models.

The Datsun 200 SX had the highest overall relative claim frequency (171) and the highest relative frequency (156) of claims exceeding \$500. The Plymouth Arrow, manufactured in Japan by Mitsubishi, had the highest relative frequency (180) of claims greater than \$250.

Again it should be pointed out that some cars, such as the two-door Cadillac DeVille, had better than average overall frequencies but showed higher claim frequencies as only larger and larger claims were counted. It is stressed that many vehicle series had higher overall claim frequencies than some of the cars listed in Table 2, but that none of them had relative claim frequencies of 130 or more for any claim size category.

Table 3 presents relative injury claim frequency results for *all* of the 1977 through 1979 models with sufficient exposure. Results are shown for 178 individual series and also for each car size group and body style subgroup — regular two-door, regular four-door, station wagon, and sports or specialty models. As in the prior tables, Table 3 lists exposure in insured vehicle years and relative claim frequencies in four claim size categories — all claims, paid claims in excess of \$250 for those vehicle series with at least 10,000 insured vehicle years, paid claims in excess of \$500 for those vehicle series with at least 15,000 insured vehicle years, and paid claims in excess of \$1,000 for those vehicle series with at least 25,000 insured vehicle years.

The individual series results in Table 3 are listed within each body style subgroup in ascending sequence of their overall relative claim frequencies. The results in Table 3 indicate that, in general, cars with smaller wheelbases had higher injury losses than cars with larger wheelbases. However, there was great variation in the loss experience of the vehicles in individual car groups.

Figure 1, page 16, presents the relative frequency of all claims, claims exceeding \$250, claims exceeding \$500, and claims exceeding \$1,000 for subcompact, compact, intermediate, and full-size 1977 through 1979 models. A clear pattern of declining losses with increasing car size is seen for subcompacts, compacts, and intermediates for all claim size categories. These three size groups accounted for 92 percent of the total

(Cont'd on page 17)

TABLE 2

**1977-1979 MODELS WITH THE WORST LOSS EXPERIENCE
RELATIVE INJURY CLAIM FREQUENCIES — PERSONAL INJURY PROTECTION COVERAGES**

MODEL YEARS	MAKE & SERIES	BODY STYLE	CAR SIZE	EXPOSURE	RELATIVE CLAIM FREQUENCIES BY SIZE OF CLAIM			
					ALL	> \$250	> \$500	> \$1000
1977-1979	Datsun 200 SX	2-Dr.	SC	15,504	171	161	156	
1977-1979	Plymouth Arrow	2-Dr.	SC	14,796	169	180		
1977-1978	Datsun F-10	2-Dr.	SC	8,532	157			
1977-1979	Dodge Colt	2-Dr.	SC	14,838	151	158		
1977-1979	Mazda GLC	*	SC	18,095	149	149	137	
1977-1979	Dodge Colt	4-Dr.	SC	5,281	146			
1977-1978	Datsun F-10	S.W.	SC	5,897	144			
1977-1979	Datsun B-210	*	SC	88,100	144	145	141	135
1979	Ford Mustang	2-Dr.	SC	31,599	141	137	140	123
1977-1979	Subaru DL	2-Dr.	SC	9,764	140			
1978-1979	Ford Fiesta	2-Dr.	SC	15,540	138	147	136	
1977-1979	Honda Civic	2-Dr.	SC	59,142	137	140	137	131
1977-1979	Toyota Corolla	*	SC	107,664	135	128	128	128
1979	Mercury Capri	2-Dr.	SC	8,961	135			
1977	Chevrolet Vega	2-Dr.	SC	13,069	135	139		
1977-1979	Mercury Bobcat	2-Dr.	SC	11,667	134	127		
1977	Pontiac Astre	2-Dr.	SC	6,274	132			
1977-1979	Datsun 810	4-Dr.	C	5,193	131			
1979	Plymouth Horizon	2-Dr.	SC	5,984	131			
1977-1979	Honda Civic	S.W.	SC	11,267	123	154		
1977-1978	Toyota Corona	*	SC	10,316	111	130		
1977-1979	Cadillac DeVille—2-dr.	Spec.	FS	70,423	89	112	125	133

Results are standardized to the distribution:

<u>Youthful Operator</u>	<u>No Youthful Operator</u>
15%	85%

Minimum exposure requirements for reporting:

All claims	5,000 vehicle years
Claims > \$250	10,000 vehicle years
Claims > \$500	15,000 vehicle years
Claims > \$1,000	25,000 vehicle years

Those results at least 30 percent *above* the all-vehicle results (100) are shown in bold print.

*Body style is not determined from Vehicle Identification Number.

TABLE 3
 RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
 PERSONAL INJURY PROTECTION COVERAGES 1977-1979 MODELS

MODEL YEARS	MAKE	SERIES	EXPOSURE	----- SIZE OF CLAIM -----			
				ALL	>\$250	>\$500	>\$1000
77-79	ALL	ALL	5674895	100	100	100	100
CLAIMS PER 1,000 INSURED VEHICLE YEARS				18.2	6.8	4.5	2.7

(See page 15 for footnotes.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1977-1979 MODELS

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
77-79	ALL	SUBCOMPACT	1518418	122	120	118	115
77-79	REGULAR TWO-DOOR MODELS		1137979	126	122	120	116
77-79	AMERICAN	PACER	6797	87			
77-79	VOLKSWAGEN	DASHER*	10344	93	94		
77-79	VOLKSWAGEN	RABBIT*	111376	99	95	93	96
77-79	HONDA	ACCORD	46094	107	101	104	100
77-78	TOYOTA	CORONA*	10316	111	130		
77-79	PONTIAC	SUNBIRD	45351	111	104	100	103
77-79	OLDSMOBILE	STARFIRE	11692	112	91		
77-79	VOLKSWAGEN	SCIROCCO	14422	118	111		
77-78	FORD	MUSTANG II	74803	119	115	115	109
77-79	CHEVROLET	MONZA	59309	119	116	114	115
77-79	BUICK	SKYHAWK	12803	119	117		
77-79	TOYOTA	CELICA	77530	120	117	114	108
77-78	AMERICAN	GREMLIN	16590	123	115	116	
77	VOLKSWAGEN	BEETLE	5421	124			
77-79	FORD	PINTO	65965	126	116	106	102
77-79	CHEVROLET	CHEVETTE	82223	127	123	122	113
79	PLYMOUTH	HORIZON	5984	131			
77	PONTIAC	ASTRE	6274	132			
77-79	MERCURY	BOBCAT	11667	134	127		
77	CHEVROLET	VEGA	13069	135	139		
79	MERCURY	CAPRI	8961	135			
77-79	TOYOTA	COROLLA*	107664	135	128	128	128
77-79	HONDA	CIVIC	59142	137	140	137	131
78-79	FORD	FIESTA	15540	138	147	136	
77-79	SUBARU	DL	9764	140			
79	FORD	MUSTANG	31599	141	137	140	123
77-79	DATSUN	B-210*	88100	144	145	141	135
77-79	MAZDA	GLC*	18095	149	149	137	
77-79	DODGE	COLT	14838	151	158		
77-78	DATSUN	F-10	8532	157			
77-79	PLYMOUTH	ARROW	14796	169	180		
77-79	DATSUN	200 SX	15504	171	161	156	
77-79	REGULAR FOUR-DOOR MODELS		139759	118	112	114	112
78-79	DATSUN	510	5148	99			
78-79	PLYMOUTH	HORIZON	32078	111	115	121	110
78-79	DODGE	OMNI	22333	114	109	115	
78-79	CHEVROLET	CHEVETTE	54475	120	107	108	107
77-79	SUBARU	DL	5550	125			
77-79	DODGE	COLT	5281	146			

(See page 15 for footnotes.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1977-1979 MODELS

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
77-79	STATION WAGONS		164978	105	104	99	100
77-79	AMERICAN	PACER	14073	75	68		
77-79	VOLKSWAGEN	DASHER	5132	81			
78-79	CHEVROLET	MONZA	6416	95			
78-79	DATSUN	510	7110	95			
77-79	MERCURY	BOBCAT	5335	95			
77-79	SUBARU	DL	19450	104	103	97	
77-78	TOYOTA	CORONA	9966	105			
77-79	FORD	PINTO	32515	106	99	88	83
77	CHEVROLET	VEGA KAMMBACK	7672	108			
77-79	TOYOTA	COROLLA	22011	116	105	106	
77-79	HONDA	CIVIC	11267	123	154		
77-78	DATSUN	F-10	5897	144			
77-79	SPORTS		75702	117	134	136	141
77-79	CHEVROLET	CORVETTE	23841	94	116	119	
77-78	DATSUN	280Z	19350	118	126	129	
77-79	MG	MGB	7979	118			

(See page 15 for footnotes.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1977-1979 MODELS

MODEL YEARS	MAKE	SERIES	EXPOSURE	----- SIZE OF CLAIM -----			
				ALL	>\$250	>\$500	>\$1000
77-79	ALL	COMPACT	1537660	102	100	100	100
77-79	REGULAR TWO-DOOR MODELS		666393	103	100	100	99
77-79	OLDSMOBILE	OMEGA	14255	91	98		
77-79	PONTIAC	PHOENIX	11136	91	88		
78-79	OLDSMOBILE	CUTLASS	124817	95	94	96	95
77-79	BUICK	SKYLARK	32176	95	94	105	104
78-79	PONTIAC	LEMANS	9309	96			
77-79	CHEVROLET	NOVA	82811	98	93	93	91
78-79	CHEVROLET	MALIBU	34467	101	86	80	96
78-79	BUICK	CENTURY/REGAL	74979	101	104	100	103
77-79	PLYMOUTH	VOLARE	39441	103	92	98	90
77	PONTIAC	VENTURA	9213	104			
77-79	DODGE	ASPEN	31102	104	95	100	90
78-79	AMERICAN	CONCORD	15499	104	104	98	
77-79	FORD	GRANADA	81169	108	112	114	117
77-79	MERCURY	MONARCH	22514	113	123	112	
77	FORD	MAVERICK	11247	118	110		
78-79	FORD	FAIRMONT	47901	120	111	116	111
78-79	MERCURY	ZEPHYR	15313	124	126	115	
77-79	REGULAR FOUR-DOOR MODELS		384648	95	93	92	96
78-79	BUICK	CENTURY	5599	79			
77-79	PONTIAC	PHOENIX	12264	80	82		
78-79	AUDI	5000	5058	81			
78-79	PONTIAC	LEMANS	10564	81	85		
78-79	OLDSMOBILE	CUTLASS	10578	85	82		
77	PONTIAC	VENTURA	7960	87			
77-79	BUICK	SKYLARK	26975	88	82	91	93
77-79	OLDSMOBILE	OMEGA	15030	89	86	88	
78-79	CHEVROLET	MALIBU	34125	90	79	73	74
77-79	MERCURY	MONARCH	27349	94	97	92	84
77-79	CHEVROLET	NOVA	74025	96	95	95	101
77-79	FORD	GRANADA	80027	98	99	95	100
78-79	AMERICAN	CONCORD	8317	100			
78-79	MERCURY	ZEPHYR	9027	105			
78-79	FORD	FAIRMONT	28306	105	102	99	109
77	FORD	MAVERICK	14031	108	101		
77-79	DATSUN	810	5193	131			

(See page 15 for footnotes.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1977-1979 MODELS

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
<u>77-79</u>	<u>STATION WAGONS</u>		<u>118351</u>	<u>88</u>	<u>81</u>	<u>80</u>	<u>73</u>
78-79	OLDSMOBILE	CUTLASS	13204	69	73		
78-79	BUICK	CENTURY	9510	71			
78-79	CHEVROLET	MALIBU	27953	82	76	80	72
78-79	MERCURY	ZEPHYR	6908	90			
78-79	PONTIAC	LEMANS	9291	91			
78-79	FORD	FAIRMONT	31608	94	90	86	75
78-79	AMERICAN	CONCORD	6445	102			
77	AMERICAN	HORNET SPORTABOUT	8216	115			
<u>77-79</u>	<u>SPECIALTY</u>		<u>368268</u>	<u>113</u>	<u>113</u>	<u>115</u>	<u>116</u>
78-79	PONTIAC	GRAND PRIX	64493	108	106	111	111
77-78	DATSUN	280Z 2+2	5294	109			
77-79	PONTIAC	FIREBIRD	83340	114	115	117	122
77-79	CHEVROLET	CAMARO	121681	116	113	115	115
78-79	CHEVROLET	MONTE CARLO	88148	117	120	121	120

(See page 15 for footnotes.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1977-1979 MODELS

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
77-79	ALL	INTERMEDIATE	2151859	85	87	87	89
77-79	REGULAR TWO-DOOR MODELS		575082	87	89	92	94
77-79	PONTIAC	CATALINA	6833	72			
77-79	OLDSMOBILE	DELTA 88	41671	75	78	80	87
77-79	PONTIAC	BONNEVILLE	21454	76	70	73	
77-79	OLDSMOBILE	NINETY EIGHT	18120	78	95	108	
77-79	BUICK	LESABRE	34821	78	88	89	94
77-79	MERCURY	COUGAR	8790	83			
79	FORD	LTD	6436	85			
77	OLDSMOBILE	CUTLASS	135977	86	85	88	90
77-79	CHEVROLET	CAPRICE	34871	87	85	91	94
77-79	CHEVROLET	IMPALA	25271	87	96	103	106
77	BUICK	CENTURY	69710	88	88	87	90
77	CHEVROLET	CHEVELLE	42743	89	85	82	92
77-78	PLYMOUTH	FURY	14146	90	88		
77-78	DODGE	MONACO	8624	91			
77	PONTIAC	LEMANS	11027	92	86		
77-79	BUICK	ELECTRA 225	24200	97	121	129	
77-79	CHRYSLER	LE BARON	17525	99	106	98	
77-79	DODGE	DIPLOMAT	11089	99	99		
77-79	FORD	LTD II	38256	102	116	112	109
77-79	REGULAR FOUR-DOOR MODELS		737802	78	78	77	79
77-79	OLDSMOBILE	NINETY EIGHT	42635	66	74	82	79
77-79	MERCURY	COUGAR	9856	68			
77-79	OLDSMOBILE	DELTA 88	75550	68	66	69	76
77-79	BUICK	LESABRE	60533	73	69	68	70
77-79	PONTIAC	CATALINA	20975	73	77	68	
77	OLDSMOBILE	CUTLASS	22777	74	86	90	
77-79	PONTIAC	BONNEVILLE	47448	75	80	77	84
77-79	CHEVROLET	CAPRICE	103822	75	82	79	79
77-79	BUICK	ELECTRA 225	38943	77	78	84	97
77-79	CHEVROLET	IMPALA	81908	79	82	83	82
77-79	DODGE	DIPLOMAT	8378	79			
77	BUICK	CENTURY	15478	82	78	68	
77-78	DODGE	MONACO	8951	83			
77-79	FORD	LTD II	26535	83	86	86	86
77	PONTIAC	LEMANS	5196	84			
77-79	CHRYSLER	LE BARON	19568	86	80	84	
77-79	PLYMOUTH	VOLARE	46556	87	78	75	69
77	CHEVROLET	CHEVELLE	27964	88	88	88	87
77-78	PLYMOUTH	FURY	10877	88	84		
79	FORD	LTD	9469	88			
77-79	DODGE	ASPEN	40152	90	83	80	82

(See page 15 for footnotes.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1977-1979 MODELS

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
77-79	STATION WAGONS		294352	76	70	71	73
77-79	BUICK	ESTATE	11172	62			
77	OLDSMOBILE	CUSTOM CRUISER	7954	62			
77	BUICK	CENTURY	5132	62			
77	OLDSMOBILE	CUTLASS	10594	66	60		
77-79	CHEVROLET	CAPRICE	29116	68	64	63	69
78-79	CHRYSLER	LE BARON	5113	69			
77-79	CHEVROLET	IMPALA	31116	74	66	67	63
77-79	PONTIAC	CATALINA	12190	75	63		
77	FORD	LTD II	9684	78			
77-79	PLYMOUTH	VOLARE	64299	79	70	72	69
77-79	DODGE	ASPEN	51349	83	78	76	78
77	CHEVROLET	CHEVELLE	18473	89	88	93	
77-78	PLYMOUTH	FURY	5024	105			
77-79	SPECIALTY		544624	97	103	104	104
77-78	BUICK	RIVIERA	8780	73			
77-79	CADILLAC	SEVILLE	15865	74	71	65	
77-79	CHRYSLER	CORDOBA	67259	92	94	88	88
77	PONTIAC	GRAND PRIX	78302	94	100	103	102
77-78	DODGE	CHARGER	16476	96	107	110	
77-79	FORD	THUNDERBIRD	157810	98	104	107	108
77-79	MERCURY	COUGAR XR-7	70403	99	108	108	103
77	CHEVROLET	MONTE CARLO	115943	105	111	112	113

(See page 15 for footnotes.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1977-1979 MODELS

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
77-79	ALL	FULL SIZE	466957	81	93	97	101
77-79	REGULAR TWO-DOOR MODELS		71976	89	94	98	104
77-78	CHRYSLER	NEW YORKER	6063	70			
77-78	MERCURY	MARQUIS	14192	88	105		
77-78	FORD	LTD	43855	91	91	95	104
77-79	REGULAR FOUR-DOOR MODELS		137426	79	86	86	92
77-78	CHRYSLER	NEWPORT	16935	58	68	75	
77-78	MERCURY	MARQUIS	31404	79	77	80	83
77-78	FORD	LTD	63642	82	89	87	93
77-78	CHRYSLER	NEW YORKER	14531	83	114		
77	DODGE	ROYAL MONACO	6230	98			
77-79	STATION WAGONS		39185	76	76	81	79
77-78	FORD	LTD	29223	76	81	92	87
77-79	SPECIALTY		218370	80	100	107	111
77-78	OLDSMOBILE	TORONADO	10147	57	53		
77-79	LINCOLN	CONTINENTAL 4D	24845	68	90	91	
77-78	CADILLAC	ELDORADO	16042	72	92	90	
77-79	LINCOLN	CONTINENTAL 2D	10682	72	110		
77-79	CADILLAC	DE VILLE 4D	43830	75	93	95	101
77-79	LINCOLN	MARK V	30183	88	107	115	115
77-79	CADILLAC	DE VILLE 2D	70423	89	112	125	133
77-79	CADILLAC	FLEETWOOD BROUGHAM	12051	91	109		

(See page 15 for footnotes.)

FOOTNOTES FOR TABLE 3:

RESULTS ARE STANDARDIZED TO THE DISTRIBUTION:

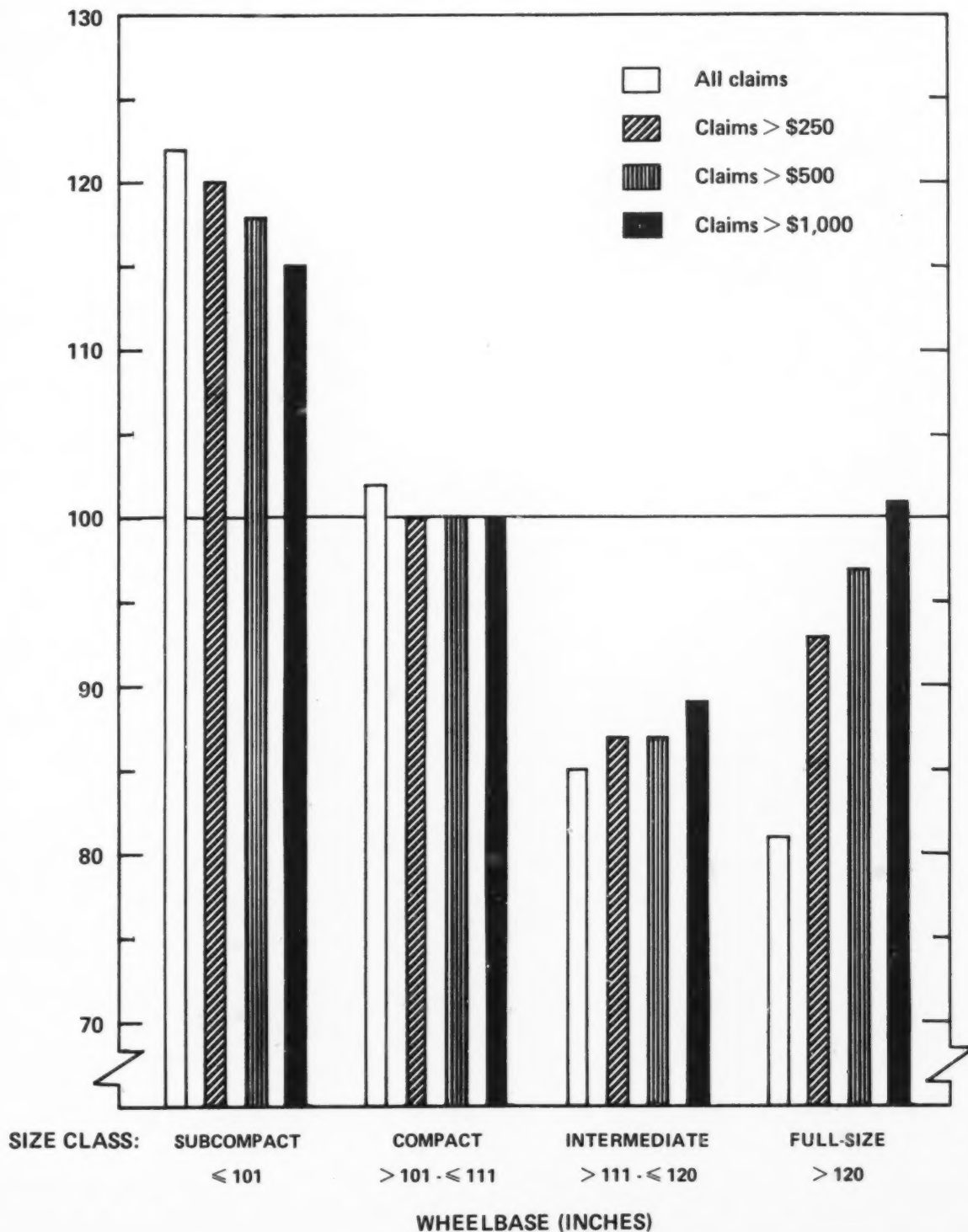
YOUTHFUL OPERATOR	NO YOUTHFUL OPERATOR
15%	85%

MINIMUM EXPOSURE REQUIREMENTS FOR REPORTING:

ALL CLAIMS	-	5,000 VEHICLE YEARS
CLAIMS > \$250	-	10,000 VEHICLE YEARS
CLAIMS > \$500	-	15,000 VEHICLE YEARS
CLAIMS > \$1000	-	25,000 VEHICLE YEARS

* BODY STYLE IS NOT DETERMINABLE FROM VEHICLE IDENTIFICATION NUMBER.

Figure 1
Relative claim frequencies by size of claim
personal injury protection coverages
1977-1979 models



exposure. Figure 1 also shows that the full-size group, which was dominated by luxury cars, had the lowest overall claim frequency, but that as claim size increased, so did the claim frequencies. An opposite effect, although less pronounced, was observed for the subcompact models.

Table 3 indicates that the results for the body style subgroups were consistent. The station wagons in every car size group and in each claim size category had the lowest claim frequency. In general, the sports or specialty models had the highest claim frequency; for the three largest claim size categories, they consistently had the highest frequency of claims. In all cases, regular two-door models had higher claim frequencies than regular four-door models.

Appendix A

Specifications Of Injury Coverages

Specifications Of Injury Coverages

Personal Injury Protection (PIP) Coverages

Personal injury protection coverages provide first-party insurance against medical and other types of losses in "no-fault" states.

The personal injury protection coverages reported in this study were based on data from the 20 states listed in Table A-1.

TABLE A-1
PERSONAL INJURY PROTECTION (PIP) COVERAGES
STATES INCLUDED

Colorado	Minnesota
Connecticut	Nevada
Delaware	New Jersey
Florida	New York
Georgia	North Dakota
Hawaii	Oregon
Kansas	Pennsylvania
Kentucky	South Carolina
Maryland	Texas
Michigan	Utah

Appendix B

Method Of Data Analysis

Method Of Data Analysis

Personal Injury Protection Coverages

Results in this report are based on "personal injury protection" (PIP) coverages which are provided in so-called no-fault states. These coverages were selected because they provide medical expense reimbursement to injured occupants of the insured vehicle.

Use of PIP insurance data to identify crashes involving injury has certain limitations because these data cannot provide information on all occupant injuries. This occurs when claims for injury costs are not made under PIP coverages because of the availability of other sources of medical expense reimbursements, such as bodily injury liability and/or health insurance coverages. Consequently, PIP claim frequencies do not include all of the crashes involving injury. This limitation should not distort comparisons among different vehicles.

Vehicle Description and Identification

The Vehicle Identification Numbers (VINs) of most new automobiles sold in the United States are individually unique numbers that contain, in coded form, detailed information as to each vehicle's make, model year, series,* and other distinguishing characteristics.

The very specific vehicle types for which results are presented in this report were derived from the VINs of the individual automobiles.

Only data with valid VINs were used for this report. Each VIN was decoded into a set of specific characteristics. For the purposes of this report the vehicle characteristics of primary concern were make, model year, series, body style, and wheelbase.

Exposure

Exposure, in terms of insured vehicle years, was computed for each individual vehicle from the coverage data. The total number of insured vehicle years for each vehicle series was then obtained by accumulating the exposure for all of the individual vehicles of that vehicle series.

For each vehicle series, the exposure was also computed for each operator age group — youthful operators and no youthful operators.*

Claim Frequency

Both pending and paid claims for an individual vehicle were first matched with its corresponding coverage data to ensure that the crash had occurred within an appropriate period of coverage for that vehicle. In every instance in which multiple claims were made for the same crash — *e.g.*, when more than one occupant of the car incurred medical expenses — the claims were treated as a single injury claim in the calculation of claim frequencies. It should be noted that some medical expenses can sometimes be incurred even though the occupants are not injured. This can occur, for example, when precautionary medical examinations are undertaken even though no injuries are apparent, or, in fact, found.

* See Appendix C for definitions.

All injury claims involving medical expense reimbursements were used, together with the corresponding exposure, to compute the claim frequencies in terms of the number of claims per 1,000 insured vehicle years. The overall claim frequency results were computed using both paid and pending claims. In addition to the overall claim frequency results, separate claim frequency results were computed for claims in which the medical losses exceeded \$250, \$500, and \$1,000. The latter three results provide indications of the extent to which particular cars are over- or under-involved in crashes resulting in more significant injuries. Claims involving non-medical losses only and claims settled without payments were not used. Thus, the claim frequencies represent the number of crashes per 1,000 insured vehicle years in which one or more injuries occurred resulting in medical expense claim payments under PIP insurance coverages.

Standardization

The losses for different vehicles can vary substantially in relation to certain non-vehicle factors. One important factor with which claim frequency varies is the operator age group; and the mix of operator ages can vary considerably among different vehicle types — so considerably that it could distort comparisons of results between vehicles if not taken into account.

Youthful operators have higher insurance claim frequencies than older drivers. Thus, if two vehicle types have different proportions of youthful operators, this difference, if not taken into consideration, would be sufficient to bias comparisons. To remove this effect for each vehicle type, the results for each vehicle type were weighted, using the values shown below, to produce a weighted average of the actual results for each operator age group. In this way the results for each vehicle type are based on the same mix, or distribution, of exposure for the two operator age groups.

Since the same weights are used for each vehicle type, the effects due to operator age group are present in equal amounts in the standardized results for each vehicle type. Therefore, to the extent that the age distributions within operator age group do not vary substantially for different vehicles, these effects can no longer bias comparisons among vehicles.

This standardization procedure is widely used in vital health statistics.* The basic principle of this standardization procedure is the introduction of a standard distribution of exposure for the different operator age groups.

OPERATOR AGE GROUP WEIGHTS

Youthful Operator	No Youthful Operator	Combined
0.15	0.85	1.0

Exposure Threshold For Reporting Results

A threshold of 5,000 insured vehicle years of exposure was selected for reporting the overall claim frequency results for vehicle size classes, subgroups, and individual vehicle series. Consequently, no results are presented in this report for any of the vehicle series with smaller amounts of exposure. In addition, different thresholds were used to determine whether the claim frequency results for medical losses exceeding the specified dollar amounts were published. In order for the claim frequency results for medical losses

* For example, see Armitage, P., *Statistical Methods in Medical Research*, Wiley, New York, 1971.

exceeding \$250 to be published, at least 10,000 insured years of exposure were required; for medical losses of greater than \$500, the minimum exposure was 15,000, and for medical losses exceeding \$1,000, the minimum exposure was 25,000 insured vehicle years.

It should be kept in mind that, in general, the greater the exposure associated with a reported claim frequency, the more confidence can be placed in it.

Appendix C

Definitions

Definitions

Claim Frequency — The number of claims for a group of vehicles, divided by the exposure for that group; expressed as claims per one thousand insured vehicle years.

Exposure — The time interval an individual vehicle is insured. Exposure for a group of vehicles is expressed in units of insured vehicle years.

First-Party Coverage — An insurance coverage under which the policyholder collects compensation for his losses from his own insurer regardless of fault.

No-Fault Auto Insurance — An auto insurance plan in which each driver/owner accepts financial responsibility for some or all losses sustained by himself, pedestrians hit by him, and occupants of his own vehicle in return for which he enjoys some immunity from liability for losses to third-party persons.

Operator Age Group — The factor distinguishing between those vehicles whose rated driver is youthful and those vehicles whose rated driver is not youthful (see *Youthful Operator*).

Personal Injury Protection (PIP) Coverage — First-party no-fault coverage in which an insurer pays, within the specified limits, the medical, hospital, and other expenses of the insured, others in his vehicle, and pedestrians struck by him.

Rated Driver — The driver who, for insurance purposes, is considered to represent the greatest loss potential for the insured automobile.

Vehicle Identification Number (VIN) — A code, variously comprising both numbers and letters; normally 8 to 15 characters in length, assigned to each automobile by its manufacturer. The VIN uniquely identifies the vehicle within at least a ten-year time span and, in recent model year vehicles, almost always contains coding which identifies the make, series, model year and other characteristics of each vehicle.

Vehicle Series — A name denoting a family of vehicles, within a make, with the same wheelbase and a degree of commonality in construction such as body, chassis, etc.

Vehicle Size Group — A grouping of vehicles based on wheelbase. There are four car size groups defined as follows:

Subcompact — Cars with wheelbases less than or equal to 101 inches.

Compact — Cars with wheelbases greater than 101 inches and less than or equal to 111 inches.

Intermediate — Cars with wheelbases greater than 111 inches and less than or equal to 120 inches.

Full-Size — Cars with wheelbases greater than 120 inches.

Each vehicle size group is further divided into four subgroups — regular two-door models, regular four-door models, station wagons, and sports or specialty models. In the compact, intermediate, and full-size groups, the specialty models are those that either have *only* two-door models or are luxury cars. The sports subgroup in the subcompacts is sports models which are basically two-seater cars.

Youthful Operator — For the purposes of this report, all males (married or single) under 25 years of age and all unmarried females under 25 years of age.

List Of Publications

Other research reports published by the Highway Loss Data Institute are:

- R72-1 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1972 Models, June 1973.*
- R73-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1973 Models Compared with 1972 Models, September 1973.*
- R73-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models, March 1974.*
- R73-3 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models During Their First Two Years, December 1974.*
- R73-4 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models During Their First Three Years, December 1975.*
- R74-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1974 Models, May 1974.*
- R74-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1974 Models During Their First Year, December 1974.*
- R74-3 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1974 Models During Their First Two Years, December 1975.*
- R75-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1975 Models, July 1975.*
- R75-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1975 Models During Their First Year, December 1975.*
- R76-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1976 Models, June 1976.*
- R76-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1976 Models During Their First Year, 1975 Models During Their First Two Years, 1974 Models During Their First Three Years, December 1976.*
- R77-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1977 Models, June 1977.*
- R77-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1977 Models During Their First Year, 1976 Models During Their First Two Years, 1975 Models During Their First Three Years, December 1977.*
- R78-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1978 Models, June 1978.*
- R78-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1978 Models During Their First Year, 1977 Models During Their First Two Years, 1976 Models During Their First Three Years, January 1979.*

- R79-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1979 Models, June 1979.*
- R79-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1979 Models During Their First Year, 1978 Models During Their First Two Years, 1977 Models During Their First Three Years, December 1979.*
- R80-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1980 Models, June 1980.*
- V78-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups and Utility Vehicles, 1978 Models During Their First Year, 1977 Models During Their First Two Years, February 1979.*
- V79-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups and Utility Vehicles, 1979 Models During Their First Year, 1978 Models During Their First Two Years, April 1980.*
- V79-2 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1977, 1978, and 1979 Vans, Pickup Trucks, and Utility Vehicles, October 1980.*
- I 75-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974 and 1975 Models, June 1976.*
- I 75-2 *Automobile Insurance Losses, Percentage of Collision Claims with Associated Injury Claims for 1974 and 1975 Models, March 1977.*
- I 76-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974, 1975, and 1976 Models, November 1977.*
- I 76-2 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974, 1975, and 1976 Models, September 1978.*
- I 77-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1977 Models, September 1978.*
- I 78-1 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results for 1977 and 1978 Models, September 1979.*
- A-1 *Automobile Insurance Losses, Collision Coverages; A Comparison of Results for 1972 and 1973 Models, May 1974.*
- A-2 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Density, 1972 and 1973 Models, September 1974.*
- A-3 *Automobile Insurance Losses, Collision Coverages; A Comparison of Results for 1973, 1974 and 1975 Models, July 1975.*

- A-4 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Density, 1974 and 1975 Models, December 1975.*
- A-5 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Body Style, 1974 and 1975 Models, December 1975.*
- A-6 *Automobile Insurance Losses, Collision Coverages; An Investigation of Relationships Between Losses and Engine Specifications, Using 1973 Models, June 1976.*
- A-7 *Automobile Insurance Losses, Collision Coverages; Annual Increases and Seasonal Variations, 1972, 1973, 1974 and 1975 Models, June 1976.*
- A-8 *Automobile Insurance Losses, Injury Coverages; A Preliminary Comparison of Results from Volkswagen Rabbits with Passive and Active Seat Belts, 1975 and 1976 Models, June 1977.*
- A-9 *Automobile Insurance Losses, Collision Coverages; A Comparison of Collision Claim Size Distributions for 1974, 1975, and 1976 Models, November 1977.*
- A-10 *Automobile Insurance Losses, Injury Coverages; Comparisons of the Injury Insurance Claim Experience of Volkswagen Rabbits with Automatic and Manual Seat Belts, June 1979.*
- A-11 *Automobile Insurance Losses, Collision Coverages; The Consistency of the Loss Experience of Specific Vehicles Produced in Several Years, 1975 Through 1978 Models, June 1979.*
- A-12 *Automobile Insurance Losses, Collision Coverages; An Assessment of the Effects of the Federal Safety Bumper Standard on the Losses for 1972 Through 1978 Models, June 1980.*

- T79-1 *Automobile Insurance Theft Losses by Make and Series, 1979 Models, June 1980.*

**Automobile Insurance Losses
Personal Injury Protection Coverages**

**CLAIM FREQUENCY RESULTS BY SIZE OF CLAIM
FOR 1977, 1978, AND 1979
VANS, PICKUP TRUCKS, AND UTILITY VEHICLES**

Research Report HLDI V79-2
October 1980

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Summary

This Highway Loss Data Institute report presents the frequencies of insurance claims for injuries to occupants of 1977, 1978, and 1979 model year vans, pickup trucks, and utility vehicles. Claim frequency results are shown separately for *all* medical claims and for those claims in which the medical losses exceeded \$250, \$500, and \$1,000.

Principal Findings

- In all claim size categories, pickup trucks had the lowest claim frequencies and, with the single exception of claims greater than \$500 (where the results for vans and utility vehicles were the same), utility vehicles had the highest frequencies.
- Among the vans, the Volkswagen Kombi/Campmobile had the highest overall claim frequency (24 percent above the average for all vehicles combined) and the highest frequency of claims exceeding \$250 (35 percent above average). The Chevrolet G20 Sportvan (¾ T) had the best results, 18 percent below average for all claims and 23 percent below average for claims exceeding \$250.
- There was considerably more variation among the claim frequencies for the pickup trucks than for the vans. The Toyota Standard Bed pickup truck had the worst results; its overall frequency was 46 percent above average and its frequency for claims exceeding \$250 was 40 percent above average. The pickup trucks with the best results were the Dodge D200/W200 (¾ T), which had an overall frequency that was 32 percent below average, and the GMC C2500/K2500 (¾ T) which had an overall frequency that was 30 percent below average and a frequency for claims exceeding \$250 that was 42 percent below average.
- The variation in the results for utility vehicles was much greater than that for either vans or pickup trucks. The Chevrolet C10/K10 Suburban (½ T) had the best results; its overall frequency was 32 percent below average, its frequency for claims exceeding \$250 was 46 percent below average, and for claims exceeding \$500 its frequency was 51 percent below average. Both of the Jeep/AMC CJ series had very poor results. The Jeep/AMC CJ-5 had by far the worst results; its overall frequency was 130 percent above average and its frequency of claims above \$250 was 179 percent above average. The overall frequency for the Jeep/AMC CJ-5 was higher than any other vehicle in this report and was also higher than all but two of the passenger cars for the same model years; the result for claims exceeding \$250 is the highest injury frequency result in this claim size category ever reported by HLDI.

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Introduction

The Highway Loss Data Institute (HLDI) is a non-profit, public service organization that gathers, processes, and publishes insurance data concerned with human and economic losses associated with motor vehicle use and, especially, with the ways such losses vary among different kinds of vehicles.

This report compares the frequencies of claims for injuries to occupants of 1977, 1978, and 1979 model year vans, pickup trucks, and utility vehicles. In addition to the frequency of all paid and pending claims combined, separate claim frequencies are shown for claims in which the payments exceeded certain dollar amounts — \$250, \$500, and \$1,000 — which represent progressively increased medical costs. The results are shown for individual vehicle series, and also for all vans, all pickup trucks, and all utility vehicles.

The injury claim frequencies reported are based on counts of crashes involving at least one medical claim under personal injury protection insurance coverages. A description of these first-party coverages, which principally insure against medical losses to occupants of the insured cars themselves, is given in Appendix A. The data analysis methods used in the preparation of this report are detailed in Appendix B. Definitions are given in Appendix C and a complete list of the vehicle series designations by class, make, and series appears in Appendix D. The data used were supplied by nine insurers: Aetna Life and Casualty, Allstate, GEICO, Kemper, Nationwide, Prudential, State Farm, Travelers, and USAA.

This report is based on injury coverages and claims involving 1977 models in the calendar period September 1976 through December 1979, 1978 models in the period September 1977 through December 1979, and 1979 models in the period September 1978 through December 1979.

Results And Discussion

This report presents four separate injury claim frequency results for 1977-1979 model year multi-purpose passenger vehicles with sufficient exposure — the frequency of all paid and pending claims combined, and the frequencies of losses exceeding \$250, \$500, and \$1,000. The results based on the larger medical losses represented by the latter three categories indicate the frequencies with which occupant injuries of increasing severities occur in particular types of vehicles.

Each claim frequency result is presented in relative terms with 100 representing the result for all vehicles in each claim size category. Thus, comparisons among vehicles should be made either within a particular claim size category or by considering the sets of claim frequency results. It is important to keep in mind that the *relative* claim frequency results for the different claim size amounts are not directly comparable because each set of *relative* results is based on a different value of 100.

The actual frequency of claims decreased rapidly with increasing medical costs. The frequency of claims exceeding \$250 was approximately 40 percent of the overall frequency, the frequency of claims exceeding \$500 was about one-fourth the overall frequency, and the frequency of claims exceeding \$1,000 was about one-sixth the overall frequency.

The total dollars paid out were dramatically influenced by the more expensive claims. Claims exceeding \$500, while representing only one-fourth of all claims, accounted for over 85 percent of the total dollars paid out. Similarly, claims exceeding \$250 accounted for about 92 percent of the total dollars, and claims exceeding \$1,000 accounted for roughly 75 percent of the total dollars.

The relative injury loss experience of particular vehicles should not change substantially from model year to model year providing that the basic design of the vehicle is essentially unchanged. (This is not as likely to be the case for losses involving vehicle damage, where parts price changes and minor cosmetic design changes between model years can substantially change the loss experience.) In view of this and because substantial amounts of exposure are needed to produce reliable injury claim frequency results, the data for model years 1977 through 1979 have been combined for those vehicles whose basic designs remained unchanged.

Figure 1 presents the injury claim frequency results for all claims, claims with losses exceeding \$250, exceeding \$500, and exceeding \$1,000 for 1977-1979 model year vans, pickups, and utility vehicles. The results are expressed in numbers of claims per 1,000 insured vehicle years of exposure.

Pickup trucks had the lowest claim frequency results for all claim size categories and, with the single exception of claims greater than \$500 (where the results for vans and utility vehicles were the same), utility vehicles had the highest.

The overall injury claim frequency for vans, pickups, and utility vehicles combined, was 13.0 claims per 1,000 insured vehicle years. The combined injury claim frequency for claims exceeding \$250 was 5.2, for claims exceeding \$500 it was 3.5, and for claims exceeding \$1,000 it was 2.2. These results were based on more than one million insured vehicle years.

Van Results

Table 1 presents the relative injury claim frequency results for all 1977-1979 model year vans with sufficient exposure. Each claim frequency is presented in relative terms with the value 100 representing the result for all multi-purpose passenger vehicles (*i.e.*, vans, pickup trucks, and utility vehicles) combined for each claim size category.

(Cont'd on page 6)

Figure 1
1977-1979 vans, pickups, utility vehicles
claim frequencies by size of claim —
personal injury protection coverages

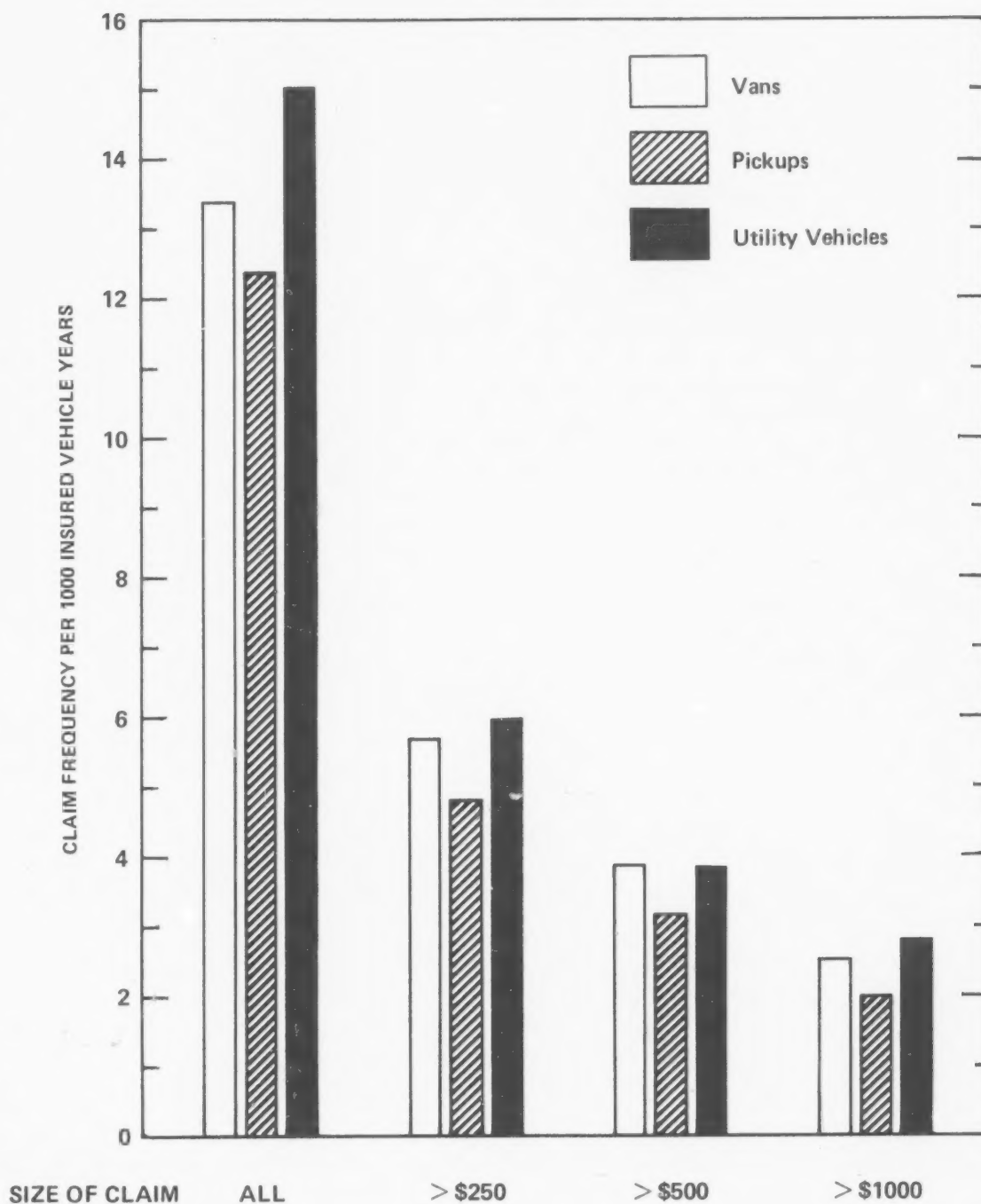


TABLE 1

1977-1979 MODEL YEAR VANS
RELATIVE INJURY CLAIM FREQUENCIES — PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE & SERIES	EXPOSURE	RELATIVE CLAIM FREQUENCIES BY SIZE OF CLAIM			
			ALL	> \$250	> \$500	> \$1000
1977-1979	ALL VANS	231,127	103	110	111	114
1977-1979	Chevrolet G20 Sportvan (¾T)	14,951	82	77		
1977-1979	Ford E-150 Club Wagon (½-¾T)	9,695	87			
1977-1979	Ford E-250 Econoline (¾T)	5,186	90			
1977-1979	GMC G2500 Vandura (¾T)	5,319	92			
1977-1979	Ford E-150 Econoline (½-¾T)	40,910	100	113	120	123
1977-1979	Dodge B100 (½T)	19,516	102	113	114	
1977-1979	Dodge B200 (¾T)	51,773	104	112	117	118
1977-1979	Chevrolet G20 Chevyvan (¾T)	26,600	108	98	111	118
1977-1979	Chevrolet G10 Chevyvan (½T)	23,261	113	123	111	
1977-1979	Ford E-100 Econoline (¾T)	5,037	116			
1977-1979	Volkswagen Kombi/Campmobile	11,889	124	135		

Results are standardized to the distribution:

<u>Youthful Operator</u>	<u>No Youthful Operator</u>
15%	85%

Minimum exposure requirements for reporting:

All claims	5,000 vehicle years
Claims > \$250	10,000 vehicle years
Claims > \$500	15,000 vehicle years
Claims > \$1,000	25,000 vehicle years

Those results at least 30 percent *above* or *below* the
all-vehicle results (100) are shown in bold print.

The results for vans in Table 1 are ranked in increasing order of their overall relative claim frequencies. Each individual relative claim frequency result which was at least 30 percent better (a relative claim frequency of 70 or less) *or* 30 percent worse (a relative claim frequency of 130 or more) than the overall result in *any* of the claim size categories is shown in bold print.

The overall injury claim frequency for all 1977-1979 vans combined was 13.4 claims per 1,000 insured vehicle years of exposure and was based on a total exposure of 231,000 years. The injury claim frequency was 5.7 for claims exceeding \$250, 3.9 for claims exceeding \$500, and 2.5 for claims greater than \$1,000. These results were slightly higher than the combined frequencies for all vehicles, and this is reflected in the relative frequencies shown in the first line of Table 1 which are all greater than 100.

Table 1 lists the results for 11 vans, and most of them fall within plus or minus 10 percent of the average for all vans combined. The Chevrolet G20 Sportvan had the lowest overall relative claim frequency (82) and the lowest relative frequency of claims exceeding \$250 (77). The Volkswagen Kombi/Campmobile had the highest overall relative claim frequency (124) and the highest relative frequency of claims larger than \$250 (135).

The exposure thresholds for reporting results were 5,000 insured vehicle years for the "all" results, 10,000 years for the greater than \$250 results, 15,000 years for the greater than \$500 results, and 25,000 years for the greater than \$1,000 results.

Pickup Truck Results

Table 2 presents the relative injury claim frequency results for all 1977-1979 model year pickup trucks with sufficient exposure. Exposure thresholds were the same as for Table 1. Each claim frequency is presented in relative terms with the value 100 representing the result for all multi-purpose passenger vehicles combined for each claim size category.

The results for pickup trucks in Table 2 are ranked in increasing order of their overall relative claim frequency. Any individual relative claim frequency result that was at least 30 percent better (a relative claim frequency of 70 or less) *or* 30 percent worse (a relative claim frequency of 130 or more) than the overall result in *any* of the claim size categories is shown in bold print.

The overall injury claim frequency for all 1977-1979 pickup trucks combined was 12.4 claims per 1,000 insured vehicle years of exposure and was based on a total exposure of 631,000 years. The injury claim frequency was 4.8 for claims exceeding \$250, 3.2 for claims exceeding \$500, and 2.0 for claims exceeding \$1,000. These results were slightly lower than the results for all vehicles combined, and this is reflected in the relative frequencies shown in the first line of Table 2 which are all less than 100.

Table 2 lists the results for 15 pickup trucks. The Dodge D200/W200 had the lowest overall relative claim frequency (68) and the GMC C2500/K2500 the lowest relative frequency of claims greater than \$250 (58). At the other end of the scale, the Toyota Standard Bed had the highest relative frequencies for overall (146) and for claims exceeding \$250 (140), both more than double the frequencies of pickups with the best injury results. In general, the ½ ton pickups had more frequent injury losses than their larger counterparts. The results for the smaller imported pickups produced by Datsun and Toyota were much higher than average.

Utility Vehicle Results

Table 3 presents the relative injury claim frequency results for all 1977-1979 model year utility vehicles with sufficient exposure. Exposure thresholds were the same as for Tables 1 and 2. Each claim frequency is presented in relative terms with the value 100 representing the result for all multi-purpose passenger vehicles (including vans and pickups) combined for each claim size category.

(Cont'd on page 9)

TABLE 2

1977-1979 MODEL YEAR PICKUPS
RELATIVE INJURY CLAIM FREQUENCIES – PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE & SERIES		EXPOSURE	RELATIVE CLAIM FREQUENCIES BY SIZE OF CLAIM			
				ALL	> \$250	> \$500	> \$1000
1977-1979	ALL PICKUPS		631,597	95	92	91	91
1977-1979	Dodge	D200/W200 (¾T)	6,350	68			
1977-1979	GMC	C2500/K2500 (¾T)	12,318	70	58		
1977-1979	Chevrolet	C20/K20 (¾T)	47,020	78	83	83	86
1977-1979	GMC	C1500/K1500 (¾T)	28,043	90	79	80	95
1977-1979	Ford	F-150 (½-¾T)	136,457	90	92	91	100
1977-1979	Ford	F-250 (¾T)	47,296	90	96	100	100
1977-1979	Chevrolet	C10/K10 (¾T)	143,836	94	88	89	86
1977-1979	Ford	F-100 (¾T)	67,342	95	92	86	82
1977-1979	Dodge	D100/W100 (½T)	35,143	100	100	100	86
1977-1979	Datsun	Standard Bed	13,512	105	108		
1977-1979	Chevrolet	El Camino	18,908	105	98	91	
1977-1979	Ford	Ranchero	6,069	112			
1977-1979	Datsun	Stretch	18,865	118	115	114	
1977-1979	Toyota	Long Bed	18,979	120	112	109	
1977-1979	Toyota	Standard Bed	10,932	146	140		

Results are standardized to the distribution:

Youthful Operator	No Youthful Operator
15%	85%

Minimum exposure requirements for reporting:

All claims	5,000 vehicle years
Claims > \$250	10,000 vehicle years
Claims > \$500	15,000 vehicle years
Claims > \$1,000	25,000 vehicle years

Those results at least 30 percent *above* or *below* the all-vehicle results (100) are shown in bold print.

TABLE 3

1977-1979 MODEL YEAR UTILITY VEHICLES
RELATIVE INJURY CLAIM FREQUENCIES — PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE & SERIES		EXPOSURE	RELATIVE CLAIM FREQUENCIES BY SIZE OF CLAIM			
				ALL	> \$250	> \$500	> \$1000
1977-1979	ALL UTILITY VEHICLES		169,823	115	115	111	127
1977-1979	Chevrolet	C10/K10 Suburban (½T)	17,352	68	54	49	91
1977-1979	Jeep/AMC	Cherokee	16,832	75	60	60	
1977-1979	International	Scout Traveltop	8,695	85			
1977-1979	GMC	C1500/K1500 Jimmy (½T)	7,271	89			
1977-1979	Chevrolet	C10/K10 Blazer (½T)	39,903	91	83	83	
1977-1979	Jeep/AMC	Wagoneer	9,546	91			
1978-1979	Ford	Bronco	16,338	92	81	77	
1977-1979	Dodge	AW100/AD100 Ramcharger	6,605	116			
1977-1979	Jeep/AMC	CJ-7	15,638	187	200	197	
1977-1979	Jeep/AMC	CJ-5	14,746	230	279		

Results are standardized to the distribution:

<u>Youthful Operator</u>	<u>No Youthful Operator</u>
15%	85%

Minimum exposure requirements for reporting:

All claims	5,000 vehicle years
Claims > \$250	10,000 vehicle years
Claims > \$500	15,000 vehicle years
Claims > \$1,000	25,000 vehicle years

Those results at least 30 percent *above* or *below* the all-vehicle results (100) are shown in bold print.

The results for utility vehicles in Table 3 are listed in increasing order of their overall relative claim frequency. Any individual relative claim frequency result that was at least 30 percent better (a relative claim frequency of 70 or less) or 30 percent worse (a relative claim frequency of 130 or more) than the overall result in *any* of the claim size categories is shown in bold print.

The overall injury claim frequency for all 1977-1979 utility vehicles combined was 15.0 claims per 1,000 insured vehicle years of exposure and was based on a total exposure of nearly 170,000 years. The injury claim frequency was 6.0 for claims greater than \$250, 3.9 for claims greater than \$500, and 2.8 for claims greater than \$1,000. These results were substantially higher than the results for all vehicles combined, and this is reflected in the relative results shown in the first line of Table 3.

Table 3 includes results for 10 utility vehicles and, as opposed to the van and pickup truck tables, has vehicles with claim frequency results that are very low and others that are very high. Eight of the ten utility vehicles listed had about average or better than average results, but two vehicles had extremely poor results. The Chevrolet C10/K10 Suburban had the lowest overall relative claim frequency (68), the lowest relative frequency of claims larger than \$250 (54), and the lowest relative frequency of claims exceeding \$500 (49). The Jeep/AMC CJ-5 had by far the highest relative frequency of all claims (230) and of claims exceeding \$250 (279). The overall result for the Jeep/AMC CJ-5 is higher than any other vehicle in this report and also higher than all but two of the passenger cars for the same model years.* The result for claims exceeding \$250 is the highest injury frequency for that claim size category ever reported by HLDI for *any* vehicle. The Jeep/AMC CJ-5 and CJ-7 account disproportionately for the wide range of frequencies for utility vehicles. Without them, a factor of almost two separates the results of the best performer from the worst. With the CJ-5 and CJ-7 included, however, the factor is over three when considering all claims and is more than five for claims greater than \$250.

*The Datsun 200 SX and Plymouth Arrow, HLDI Report I 79-1, "Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1977, 1978, and 1979 Models."

Appendix A

Specifications Of Injury Coverages

Specifications Of Injury Coverages

Personal Injury Protection (PIP) Coverages

Personal injury protection coverages provide first-party insurance against medical and other types of losses in "no-fault" states.

The personal injury protection coverages reported in this study were based on data from the 20 states listed in Table A-1.

TABLE A-1
PERSONAL INJURY PROTECTION (PIP) COVERAGES
STATES INCLUDED

Colorado	Minnesota
Connecticut	Nevada
Delaware	New Jersey
Florida	New York
Georgia	North Dakota
Hawaii	Oregon
Kansas	Pennsylvania
Kentucky	South Carolina
Maryland	Texas
Michigan	Utah

Appendix B

Method Of Data Analysis

Method Of Data Analysis

Personal Injury Protection Coverages

Results in this report are based on "personal injury protection" (PIP) coverages which are provided in so-called no-fault states. These coverages were selected because they provide medical expense reimbursement to injured occupants of the insured vehicle.

Use of PIP insurance data to identify crashes involving injury has certain limitations because these data cannot provide information on all occupant injuries. This occurs when claims for injury costs are not made under PIP coverages because of the availability of other sources of medical expense reimbursements, such as bodily injury liability and/or health insurance coverages. Consequently, PIP claim frequencies do not include all of the crashes involving injury. This limitation should not distort comparisons among different vehicles.

Vehicle Description And Identification

The Vehicle Identification Numbers (VINs) of most new vehicles sold in the United States are individually unique numbers that contain, in coded form, detailed information as to each vehicle's make, model year, series,* and other distinguishing characteristics.

The very specific vehicle types for which results are presented in this report were derived from the VINs of the individual vehicles.

Only data with valid VINs were used for this report. Each VIN was decoded into a set of specific characteristics. For the purposes of this report, the vehicle characteristics of primary concern were make, model year, series, body style, and wheelbase.

Exposure

Exposure, in terms of insured vehicle years, was computed for each individual vehicle from the coverage data. The total number of insured vehicle years for each vehicle series was then obtained by accumulating the exposure for all of the individual vehicles of that vehicle series.

For each vehicle series, the exposure was also computed for each operator age group — youthful operators and no youthful operators.*

Claim Frequency

Both pending and paid claims for an individual vehicle were first matched with its corresponding coverage data to ensure that the crash had occurred within an appropriate period of coverage for that vehicle. In every instance in which multiple claims were made for the same crash — e.g., when more than one occupant of the car incurred medical expenses — the claims were treated as a single injury claim in the calculation of claim frequencies. It should be noted that some medical expenses can sometimes be incurred even though the occupants are not injured. This can occur, for example, when precautionary medical examinations are undertaken even though no injuries are apparent, or, in fact, found.

*See Appendix C for definitions.

All injury claims involving medical expense reimbursements were used, together with the corresponding exposure, to compute the claim frequencies in terms of the number of claims per 1,000 insured vehicle years. The overall claim frequency results were computed using both paid and pending claims. In addition to the overall claim frequency results, separate claim frequency results were computed for claims in which the medical losses exceeded \$250, \$500, and \$1,000. The latter three results provide indications of the extent to which particular cars are over- or under-involved in crashes resulting in more significant injuries. Claims involving non-medical losses only and claims settled without payments were not used. Thus, the claim frequencies represent the number of crashes per 1,000 insured vehicle years in which one or more injuries occurred resulting in medical expense claim payments under PIP insurance coverages.

Standardization

The losses for different vehicles can vary substantially in relation to certain non-vehicle factors. One important factor with which claim frequency varies is the operator age group; and the mix of operator ages can vary considerably among different vehicle types — so considerably that it could distort comparisons of results between vehicles if not taken into account.

Youthful operators have higher insurance claim frequencies than older drivers. Thus, if two vehicle types have different proportions of youthful operators, this difference, if not taken into consideration, would be sufficient to bias comparisons. To remove this effect for each vehicle type, the results for each vehicle type were weighted, using the values shown below, to produce a weighted average of the actual results for each operator age group. In this way the results for each vehicle type are based on the same mix, or distribution, of exposure for the two operator age groups.

Since the same weights are used for each vehicle type, the effects due to operator age group are present in equal amounts in the standardized results for each vehicle type. Therefore, to the extent that the age distributions within operator age group do not vary substantially for different vehicles, these effects can no longer bias comparisons among vehicles.

This standardization procedure is widely used in vital health statistics.* The basic principle of this standardization procedure is the introduction of a standard distribution of exposure for the different operator age groups.

OPERATOR AGE GROUP WEIGHTS

Youthful Operator	No Youthful Operator	Combined
0.15	0.85	1.0

Exposure Threshold For Reporting Results

A threshold of 5,000 insured vehicle years of exposure was selected for reporting the overall claim frequency results for vehicle size classes, subgroups, and individual vehicle series. Consequently, no results are presented in this report for any of the vehicle series with smaller amounts of exposure. In addition, different thresholds were used to determine whether the claim frequency results for medical losses exceeding the specified dollar amounts were published. In order for the claim frequency results for medical losses

*For example, see Armitage, P., *Statistical Methods in Medical Research*, Wiley, New York, 1971.

exceeding \$250 to be published, at least 10,000 insured years of exposure were required; for medical losses of greater than \$500, the minimum exposure was 15,000; and for medical losses exceeding \$1,000, the minimum exposure was 25,000 insured vehicle years.

It should be kept in mind that, in general, the greater the exposure associated with a reported claim frequency, the more confidence can be placed in it.

Appendix C

Definitions

Definitions

Claim Frequency — The number of claims for a group of vehicles, divided by the exposure for that group; expressed as claims per one thousand insured vehicle years.

Exposure — The time interval an individual vehicle is insured. Exposure for a group of vehicles is expressed in units of insured vehicle years.

First-Party Coverage — An insurance coverage under which the policyholder collects compensation for his losses from his own insurer regardless of fault.

No-Fault Auto Insurance — An auto insurance plan in which each driver/owner accepts financial responsibility for some or all losses sustained by himself, pedestrians hit by him, and occupants of his own vehicle in return for which he enjoys some immunity from liability for losses to third-party persons.

Operator Age Group — The factor distinguishing between those vehicles whose rated driver is youthful and those vehicles whose rated driver is not youthful (see *Youthful Operator*).

Personal Injury Protection (PIP) Coverage — First-party no-fault coverage in which an insurer pays, within the specified limits, the medical, hospital, and other expenses of the insured, others in his vehicle, and pedestrians struck by him.

Rated Driver — The driver who, for insurance purposes, is considered to represent the greatest loss potential for the insured automobile.

Vehicle Identification Number (VIN) — A code, variously comprising both numbers and letters; normally 8 to 15 characters in length, assigned to each automobile by its manufacturer. The VIN uniquely identifies the vehicle within at least a ten-year time span and, in recent model year vehicles, almost always contains coding which identifies the make, series, model year and other characteristics of each vehicle.

Vehicle Series — A name denoting a family of vehicles, within a make, with the same wheelbase and a degree of commonality in construction such as body, chassis, etc. (See Appendix D.)

Youthful Operator — For the purposes of this report, all males (married or single) under 25 years of age and all unmarried females under 25 years of age.

Appendix D

Vehicle Series Designations 1977, 1978, And 1979 Models

Vehicle Series Designations — 1977, 1978, And 1979 Models

This report used the following definitions for 1977, 1978, and 1979 model year vans, pickups, and utility vehicles:

Vans — Fully enclosed vehicles with either no hood or a very short hood, in which the engine is placed at least 50 percent behind the windshield. The driver's position is usually well forward, nearly beside the engine, usually within the forward 25% of the wheelbase. These vehicles are designed for cargo transport and are equipped with a right side cargo access door and rear doors. The cargo area is not separated from the passenger area — both are enclosed under the same roof. Some passenger vans are equipped with additional seats in the cargo area and usually have additional side windows also.

Pickups — Cargo-carrying vehicles, usually on a truck chassis, with an enclosed cab and a separate open cargo area. The open cargo area generally is a box with raised sides with an opening tailgate. There are also a small number of auto pickups which are similar to regular pickups except that they are built on a passenger car chassis.

Utility Vehicles — Vehicles built on heavy-duty chassis capable of off-road use. They are of conventional construction with the driver behind the engine. The cargo and passenger areas are integral with the driver area. Many of these vehicles are equipped with soft or removable tops. Frequently, these vehicles are equipped with four-wheel drive.

Vehicles of 1-ton rating and above generally equipped with dual rear wheels have been excluded because they are primarily not utilized as private passenger vehicles.

TABLE D
VEHICLE SERIES DESIGNATIONS
1977, 1978, AND 1979 MODELS

VEHICLE CLASS MAKE SERIES			VEHICLE CLASS MAKE SERIES			
VANS	Chevrolet	G10 Chevyvan (½T)	PICKUPS (Cont'd)	Internat'l. Harvester	Terra ²	
		G20 Chevyvan (¾T)				
		G10 Sportvan (½T)		Jeep/AMC	J10 (½T)	
		G20 Sportvan (¾T)			J20 (¾T)	
	Dodge	B100 (½T)		Mazda	Long Bed ⁴	
		B200 (¾T)			Standard Bed ⁴	
	Ford	E-100 Club Wagon (½T)		Plymouth	Arrow ²	
		E-150 Club Wagon (½-¾T)				
		E-250 Club Wagon (¾T)		Subaru	Brat ⁴	
		E-100 Econoline (½T)				
		E-150 Econoline (½-¾T)	Toyota	Long Bed		
		E-250 Econoline (¾T)		Standard Bed		
GMC	G1500 Rally Wagon (½T)	UTILITY VEHICLES	Chevrolet	C10/K10 Blazer (½T)		
	G2500 Rally Wagon (¾T)			C10/K10 Suburban (½T)		
	G1500 Vandura (½T)			C20/K20 Suburban (¾T)		
	Plymouth		PB100 Voyager (½T)	Dodge	AD100/AW100 Ramcharger	
PB200 Voyager (¾T)						
Volkswagen	Kombi/Campmobile		Ford		Bronco (wheelbase = 92 in.) ¹	
					Bronco (wheelbase = 104 in.) ⁴	
PICKUPS	Chevrolet		C10/K10 Chassis Cab (½T)	GMC	C1500/K1500 Jimmy (½T)	
			C10/K10 (½T)			C1500/K1500 Suburban (½T)
			C20/K20 Chassis Cab (¾T)			C2500/K2500 Suburban (¾T)
			C20/K20 (¾T)			
			El Camino			
		Luv ²				
	Datsun	Standard Bed	Internat'l. Harvester		Scout ³	
		Stretch				Scout SS II ²
		Scout Traveltop				
	Dodge	D-50 ²			Jeep/AMC	Cherokee
		D100/W100 (½T)	CJ-5			
		D200/W200 (¾T)	CJ-7			
		Ford	Courier ²	Plymouth	Wagoneer	
	F-100 (½T)		PD100/PW100 Trailduster			
	F-150 (½-¾T)		Toyota	Land Cruiser		
	F-250 (¾T)			Land Cruiser S/W		
	Ranchero					
	GMC	C1500/K1500 Chassis Cab (½T)				
		C1500/K1500 (½T)				
		C2500/K2500 Chassis Cab (¾T)				
		C2500/K2500 (¾T)				
Sprint ¹						

¹ 1977 models only
² 1979 models only

³ 1977-1978 models only
⁴ 1978-1979 models only

¹ 1977 models only² 1979 models only³ 1977-1978 models only⁴ 1978-1979 models only

List Of Publications

Other research reports published by the Highway Loss Data Institute are:

- R72-1 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1972 Models, June 1973.*
- R73-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1973 Models Compared with 1972 Models, September 1973.*
- R73-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models, March 1974.*
- R73-3 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models During Their First Two Years, December 1974.*
- R73-4 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models During Their First Three Years, December 1975.*
- R74-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1974 Models, May 1974.*
- R74-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1974 Models During Their First Year, December 1974.*
- R74-3 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1974 Models During Their First Two Years, December 1975.*
- R75-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1975 Models, July 1975.*
- R75-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1975 Models During Their First Year, December 1975.*
- R76-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1976 Models, June 1976.*
- R76-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1976 Models During Their First Year, 1975 Models During Their First Two Years, 1974 Models During Their First Three Years, December 1976.*
- R77-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1977 Models, June 1977.*
- R77-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1977 Models During Their First Year, 1976 Models During Their First Two Years, 1975 Models During Their First Three Years, December 1977.*
- R78-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1978 Models, June 1978.*
- R78-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1978 Models During Their First Year, 1977 Models During Their First Two Years, 1976 Models During Their First Three Years, January 1979.*
- R79-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1979 Models, June 1979.*

- R79-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1979 Models During Their First Year, 1978 Models During Their First Two Years, 1977 Models During Their First Three Years, December 1979.*
- R80-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1980 Models, June 1980.*
- V78-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups and Utility Vehicles, 1978 Models During Their First Year, 1977 Models During Their First Two Years, February 1979.*
- V79-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups and Utility Vehicles, 1979 Models During Their First Year, 1978 Models During Their First Two Years, April 1980.*
- I 75-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974 and 1975 Models, June 1976.*
- I 75-2 *Automobile Insurance Losses, Percentage of Collision Claims with Associated Injury Claims for 1974 and 1975 Models, March 1977.*
- I 76-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974, 1975, and 1976 Models, November 1977.*
- I 76-2 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974, 1975, and 1976 Models, September 1978.*
- I 77-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1977 Models, September 1978.*
- I 78-1 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results for 1977 and 1978 Models, September 1979.*
- I 79-1 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1977, 1978, and 1979 Models, October 1980.*
- A-1 *Automobile Insurance Losses, Collision Coverages; A Comparison of Results for 1972 and 1973 Models, May 1974.*
- A-2 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Density, 1972 and 1973 Models, September 1974.*
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**Automobile Insurance Losses
Personal Injury Protection Coverages**

**CLAIM FREQUENCY RESULTS BY SIZE OF CLAIM
1978 - 1980 MODELS**

Research Report HLDI I 80-1
September 1981

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Summary

This Highway Loss Data Institute (HLDI) report presents the frequency of claims for injuries to occupants of 1978, 1979, and 1980 model year passenger cars. Claim frequency results are presented for *all* medical claims and for medical claims exceeding \$250, \$500, and \$1,000.

Principal Findings

- Table 1 on page 5 summarizes the 1978 through 1980 models with the best injury loss experience. There are 19 individual vehicle series in Table 1 with at least one claim frequency result that was 30 percent or more below (better than) the result for all cars combined. Among these cars, 12 were intermediate size and most were station wagons or regular four-door models. No regular two-door models were among the cars with the best experience. All 19 of the best cars were manufactured in the United States, 15 of them by General Motors.
- Table 2 on page 6 summarizes the 1978 through 1980 models with the worst injury loss experience. There are 17 individual vehicle series in Table 2 with at least one claim frequency result that was 30 percent or more above (worse than) the all-car result. All of these 17 cars were either small subcompact or subcompact size and most were regular two-door models. Fourteen of the seventeen were imported models.
- Many of the vehicles with the worst injury loss experience had claim frequencies which were more than double those of many of the vehicles with the best injury loss experience.
- Among the cars with the best injury loss experience, the Oldsmobile Toronado and the Oldsmobile Custom Cruiser had the lowest overall claim frequency (42 percent below average). The Buick Estate station wagon had the lowest frequency of claims exceeding \$250 (48 percent below average), and the Oldsmobile Custom Cruiser and the Buick Century station wagon had the lowest frequency of claims greater than \$500 (43 percent below average). The Chevrolet Caprice station wagon had the lowest frequency of claims greater than \$1,000 (43 percent below average).
- Among the cars with the worst injury loss experience, the Dodge Challenger had the highest overall claim frequency (62 percent above average). The Plymouth Arrow (manufactured in Japan by Mitsubishi) had the highest frequency of claims exceeding \$250 (65 percent above average).
- There was a general pattern of declining claim frequencies with increasing car size through the intermediate size class for all claim size categories. However, there were large variations in injury claim frequencies among cars in the same car size and body style groups.
- Two-door models consistently had higher injury claim frequencies than four-door models of the same size.
- The *relative* claim frequencies for sports and specialty models consistently increased as the claim size amounts increased.

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Introduction

The Highway Loss Data Institute (HLDI) is a non-profit, public service organization that gathers, processes, and publishes insurance data concerned with human and economic losses associated with motor vehicle use and, especially, with the ways such losses vary among different kinds of vehicles.

This report compares the frequencies of claims for injuries to occupants of 1978 through 1980 model year passenger cars. In addition to the frequency of all paid and pending claims combined, separate claim frequencies are shown for claims in which the payments exceeded certain dollar amounts — \$250, \$500, and \$1,000 — which represent progressively increased medical costs. The results are shown for individual vehicle series, and also by car size and body style subgroup.*

The injury claim frequencies reported are based on counts of crashes involving at least one claim for medical expenses made under personal injury protection insurance coverages. A description of these first-party coverages, which principally insure against medical losses to occupants of the insured cars themselves, is given in Appendix A. The data analysis methods used in the preparation of this report are detailed in Appendix B. Definitions are given in Appendix C. Detailed overall claim frequency results by operator age group are provided in Appendix D. The data used were supplied by ten insurers: Aetna, Allstate, GEICO, Kemper, Liberty Mutual, Nationwide, Prudential, State Farm, Travelers, and USAA.

This report is based on injury coverages and injury claims involving 1978 through 1980 models in the period from their introductions through December 1980. The results for vehicles discontinued prior to the 1980 model year are not included in this report.

*Vehicle series designations by make and size class for series whose results are included in this report are given in HLDI reports R80-1, R79-1, and R78-1.

Results And Discussion

This report presents injury claim frequency results for 1978-1980 model year cars. The frequency of all paid and pending claims combined, and the frequencies of paid claims exceeding \$250, \$500, and \$1,000 respectively are shown for those cars with sufficient exposure.* The results based on the larger medical claims indicate the frequency of occurrence of injuries of increasing severities.

Each claim frequency result is presented in relative terms, with 100 representing the result for all cars combined in each claim size category. Thus, comparisons among vehicles should be made either within a particular claim size category or by considering the sets of claim frequency results. It is important to keep in mind that relative claim frequency results for the different claim size amounts are not directly comparable because the sets of relative results are based on different values of 100.

The actual frequencies of claims decreased rapidly with increasing medical costs. The frequency of claims exceeding \$250 was approximately 40 percent of the overall frequency, the frequency of claims exceeding \$500 was about one-fourth the overall frequency, and the frequency of claims exceeding \$1,000 was less than one-sixth the overall frequency.

The total dollars paid out were dramatically influenced by the more expensive claims. For example, claims exceeding \$250, while representing only 40 percent of all claims, accounted for over 92 percent of the total dollars paid out. Similarly, claims exceeding \$500 accounted for over 85 percent of the total dollars and claims exceeding \$1,000 accounted for over 75 percent of the total dollars.

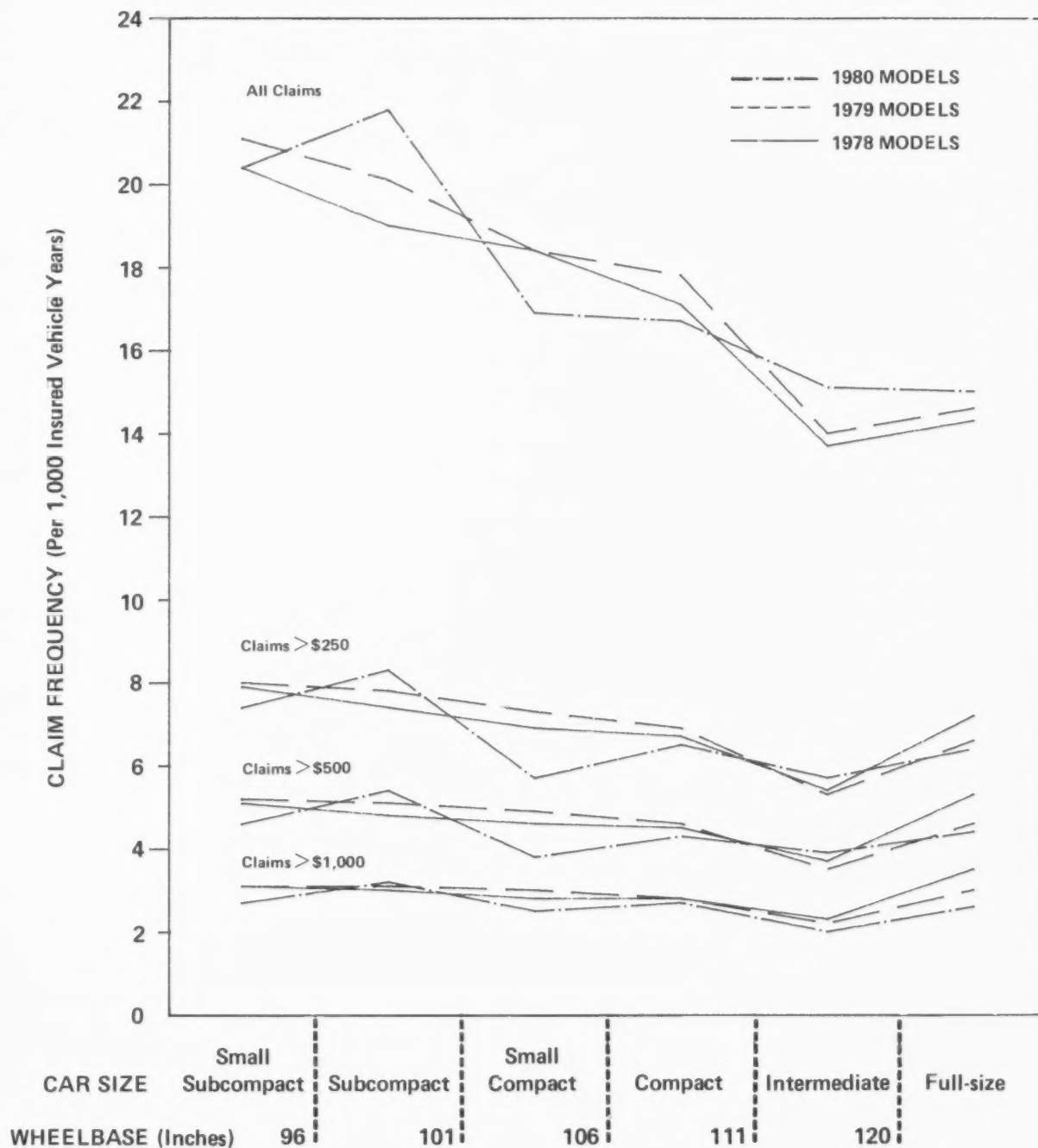
The relative injury loss experience of particular vehicles should not change substantially from model year to model year providing that the basic design of the vehicle is essentially unchanged. Figure 1 presents the injury claim frequencies separately for 1978, 1979, and 1980 models by vehicle size class. Only those vehicle series which were manufactured in all three years were used for this analysis. Clearly, the claim frequencies by size class are consistent for these three model years. In view of these results and because substantial amounts of exposure are needed to produce reliable injury claim frequency results, the data for model years 1978 through 1980 were combined for those cars whose basic designs remained unchanged. Vehicle series which were discontinued or redesigned prior to 1980 (for example, the Chevrolet Nova produced through model year 1979) are not included in this report. The total exposure amassed by cars of the three model years included in this report was nearly 5.5 million vehicle years.

Table 1 summarizes the individual 1978 through 1980 models with the best injury loss experience in terms of claim frequencies by size of claim. Any individual series whose claim frequency was at least 30 percent better (a relative claim frequency of 70 or less) than the all-car result for any of the claim size categories is listed. The cars are ranked in increasing order of their overall relative claim frequency. Each individual relative claim frequency result which was 70 or less is shown in bold print.

The overall injury claim frequency for all 1978 through 1980 models combined was 17.8 claims per 1,000 insured vehicle years. The injury claim frequency was 6.9 for claims exceeding \$250, 4.6 for claims exceeding \$500, and 2.8 for claims exceeding \$1,000.

*The exposure thresholds for reporting results were 5,000 insured vehicle years for the "all" results, 10,000 years for the greater than \$250 results, 15,000 years for the greater than \$500 results, and 25,000 years for the greater than \$1,000 results. The results shown in this report were standardized to remove the effects due to differences in the mix of operator age group among different vehicles. Standardizing for this non-vehicle factor ensures that its mix is the same for each result. It should be noted that other non-vehicle factors could vary among different vehicles and that any effects resulting from such factors have not necessarily been eliminated from the results presented in this report. The standardization procedure is described in detail in Appendix B. The unstandardized results for overall claim frequencies by operator age group are presented in Appendix D.

Figure 1
Personal Injury Protection Coverages
Claim Frequencies by Car Size, Claim Size, and Model Year
1978-1980 Models



There are 19 vehicle series listed in Table 1; these are the cars with at least one claim frequency result that was 30 percent or more below (better than) average. These cars had the best injury loss experience among the 139 vehicle series from model year 1978 through 1980 with sufficient exposure to be summarized in Table 3. There are 12 intermediate size cars among the 19 cars with the best loss experience, all but one of which were station wagons or regular four-door models. There were no regular two-door models on the list. All of the 19 models with the best injury loss experience were manufactured in the United States, 15 of them by General Motors.

The Oldsmobile Custom Cruiser and the Oldsmobile Toronado, an intermediate size specialty model, had the lowest overall relative claim frequency (58). The Buick Estate station wagon had the lowest relative frequency (52) of claims exceeding \$250, and the Oldsmobile Custom Cruiser and Buick Century station wagon had the lowest relative claim frequency (57) of claims greater than \$500. Of the cars with sufficient exposure to report a result for claims exceeding \$1,000, the Chevrolet Caprice station wagon had the lowest relative claim frequency (57).

TABLE 1
1978-1980 MODELS WITH THE BEST LOSS EXPERIENCE
RELATIVE INJURY CLAIM FREQUENCIES — PERSONAL INJURY PROTECTION COVERAGES

Model Years	Make and Series	Body Style	Car* Size	Exposure	RELATIVE CLAIM FREQUENCIES BY SIZE OF CLAIM			
					All	> \$250	> \$500	> \$1,000
1978-1980	Oldsmobile Custom Cruiser	S.W.	I	18,210	58	58	57	
1979-1980	Oldsmobile Toronado	Spec.	I	12,206	58	51		
1978-1980	Buick Estate	S.W.	I	11,760	62	52		
1978-1980	Oldsmobile Ninety-Eight	4 Dr.	I	44,223	62	70	74	75
1978-1980	Oldsmobile Cutlass	S.W.	C	31,627	65	64	67	68
1980	Oldsmobile Omega	4 Dr.	SC	5,164	66			
1978-1980	Chevrolet Caprice	S.W.	I	32,359	67	61	63	57
1978-1980	Pontiac Bonneville	S.W.	I	8,967	67			
1978-1980	Oldsmobile Delta 88	4 Dr.	I	87,667	69	70	72	68
1978-1980	Pontiac Catalina	4 Dr.	I	16,901	69	75	78	
1978-1980	Buick LeSabre	4 Dr.	I	59,241	73	71	70	64
1979-1980	Mercury Marquis	4 Dr.	I	15,165	74	72	65	
1978-1980	Buick Century	S.W.	C	22,062	76	59	57	
1978-1980	Chevrolet Malibu	S.W.	C	65,679	78	70	67	64
1978-1980	Mercury Zephyr	S.W.	SC	15,996	80	74	61	
1978-1980	Buick Century	4 Dr.	C	21,331	83	74	65	
1980	Chevrolet Citation	4 Dr.	SC	23,166	83	77	63	
1978-1980	Dodge Aspen	4 Dr.	I	33,056	84	75	70	64
1978-1980	Plymouth Volare	S.W.	I	39,562	87	72	67	71

* SC (Small Compact): 101 < Wheelbase ≤ 106 inches

C (Compact): 106 < Wheelbase ≤ 111 inches

I (Intermediate): 111 < Wheelbase ≤ 120 inches

Those results at least 30 percent *below* the all-vehicle results (100) are shown in bold print. Only cars with 1980 models are included.

Minimum Exposure requirements for reporting:

All claims 5,000 vehicle years

Claims > \$250 10,000 vehicle years

Claims > \$500 15,000 vehicle years

Claims > \$1,000 25,000 vehicle years

It should be noted that there are other vehicle series which had lower overall claim frequencies than some of the cars listed in Table 1, but did not have relative claim frequencies of 70 or less for any of the claim size categories. The results for these cars are shown in Table 3.

Table 2 summarizes in similar fashion the individual 1978 through 1980 models with the worst injury loss experience. Any individual series whose claim frequency was at least 30 percent worse (a relative claim frequency of at least 130) than the all-car result for any of the claim size categories is listed. Cars are listed in decreasing order of their overall relative claim frequency.

There are 17 series in Table 2. All of the cars with the worst loss experience were either small subcompact or subcompact size, principally regular two-door models. The first six and a total of 14 of the 17 were imported models.

The Dodge Challenger had the highest overall relative claim frequency (162), nearly three times the frequency of the car with the best results. The Plymouth Arrow (manufactured in Japan by Mitsubishi) had the highest relative frequency (165) of claims exceeding \$250.

TABLE 2

1978-1980 MODELS WITH THE WORST LOSS EXPERIENCE
RELATIVE INJURY CLAIM FREQUENCIES — PERSONAL INJURY PROTECTION COVERAGES

Model Years	Make and Series	Body Style	Car* Size	Exposure	RELATIVE CLAIM FREQUENCIES BY SIZE OF CLAIM			
					All	> \$250	> \$500	> \$1,000
1978-1980	Dodge Challenger	2 Dr.	S	7,717	162			
1978-1980	Fiat Brava	**	S	6,572	156			
1980	Toyota Corolla Tercel	2 Dr.	S	9,378	153			
1980	Datsun 200SX	2 Dr.	SS	7,159	150			
1978-1980	Plymouth Sapporo	2 Dr.	S	6,941	149			
1978-1980	Plymouth Arrow	2 Dr.	SS	14,403	148	165		
1979-1980	Dodge Omni	2 Dr.	S	18,214	142	139	143	
1979-1980	Honda Prelude	2 Dr.	SS	11,926	140	146		
1978-1980	Mazda GLC	**	SS	33,258	139	142	133	139
1978-1980	Honda Civic	2 Dr.	SS	80,170	135	139	137	136
1978-1980	Datsun 210	**	SS	82,618	135	133	126	118
1979-1980	Plymouth Champ	2 Dr.	SS	10,793	134	132		
1979-1980	Mazda RX-7	Sports	SS	18,088	132	142	146	
1978-1980	Mercury Bobcat	2 Dr.	SS	19,136	131	125	107	
1980	Toyota Corolla	**	SS	19,445	130	129	126	
1979-1980	Ford Mustang	2 Dr.	S	109,383	128	130	133	121
1978-1980	Honda Civic	S.W.	SS	16,269	119	130	146	

* SS (Small Subcompact): Wheelbase $\leq$ 96 inches
S (Subcompact): $96 <$ Wheelbase $\leq$ 101 inches

** Body Style cannot be determined from Vehicle Identification Number.

Those results at least 30 percent above the all-vehicle results (100) are shown in bold print. Only cars with 1980 models are included.

Minimum Exposure requirements for reporting:

All claims	5,000 vehicle years
Claims > \$250	10,000 vehicle years
Claims > \$500	15,000 vehicle years
Claims > \$1,000	25,000 vehicle years

Table 3 presents relative injury claim frequency results for all of the 1978 through 1980 models with sufficient exposure. Results are shown for individual series and also for each car size group and body style subgroup – regular two-door, regular four-door, station wagon, and sports or specialty models.

The individual series results in Table 3 are listed within each body style subgroup in ascending sequence of their overall relative claim frequencies. The results in Table 3 indicate that, in general, cars with smaller wheelbases had higher injury losses than cars with larger wheelbases. However, there was great variation in the loss experience of the vehicles in individual car groups.

Figure 2, page 15, presents the relative frequency of all claims, claims exceeding \$250, claims exceeding \$500, and claims exceeding \$1,000 for small subcompact, subcompact, small compact, compact, and intermediate 1978 through 1980 models. These five groups accounted for over 97 percent of the total exposure. The full-size models were not included in this figure because that size group contained only specialty (luxury) cars. A general pattern of declining losses with increasing car size is seen in Figure 2 for all claim size categories.

Table 3 indicates that the results for the body style subgroups were consistent and followed a pattern similar to the overall size group results. In every car size group and in each claim size category, regular two-door models had higher claim frequencies than regular four-door models. In general, sports and specialty models had the highest claim frequencies and station wagons had the lowest.

Figure 3, page 16, shows the relative claim frequency results for sports and specialty models in the various car size categories (there were no specialty models in the small compact size class). Unlike the results for other body style subgroups, these results show a consistent pattern of increasing relative claim frequencies associated with increasing claim size amounts.

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART A: ALL CARS

MODEL YEARS	MAKE	SERIES	EXPOSURE	----- SIZE OF CLAIM -----			
				ALL	>\$250	>\$500	>\$1000
78-80	ALL	ALL	5454801	100	100	100	100
CLAIMS PER 1,000 INSURED VEHICLE YEARS				17.8	6.9	4.6	2.8

(See footnotes on page 14.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART B: SMALL SUBCOMPACT CARS (WHEELBASE < 96 IN.)

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
78-80	ALL	SMALL SUBCOMPACT	1015104	117	114	111	111
78-80	REGULAR TWO-DOOR MODELS		848025	119	116	111	111
78-80	VOLKSWAGEN	RABBIT*	164051	90	87	85	86
78-80	HONDA	ACCORD	70105	103	101	107	107
78-80	VOLKSWAGEN	SCIROCCO	20239	110	106	109	
79-80	AMERICAN	SPIRIT	19763	110	100	102	
78-80	DATSUN	510*	22804	112	109	102	
78-80	CHEVROLET	CHEVETTE	107266	119	116	109	107
78-80	FORD	PINTO	91174	120	113	107	104
78-80	FORD	FIESTA	37387	126	125	115	118
79-80	DODGE	COLT (FWD)	12208	128	116		
79-80	DATSUN	310*	22362	128	113	102	
80	TOYOTA	COROLLA*	19445	130	129	126	
78-80	MERCURY	BOBCAT	19136	131	125	107	
79-80	PLYMOUTH	CHAMP	10793	134	132		
78-80	DATSUN	210*	82618	135	133	126	118
78-80	HONDA	CIVIC	80170	135	139	137	136
78-80	MAZDA	GLC*	33258	139	142	133	139
79-80	HONDA	PRELUDE	11926	140	146		
78-80	PLYMOUTH	ARROW	14403	148	165		
80	DATSUN	200SX	7159	150			
78-80	REGULAR FOUR-DOOR MODELS		18681	93	94	78	
79-80	HONDA	ACCORD	18681	93	94	78	
78-80	STATION WAGONS		96895	107	101	102	104
78-80	MERCURY	BOBCAT	5640	97			
79-80	DATSUN	210	19005	103	97	96	
78-80	DATSUN	510	16880	104	96	104	
78-80	FORD	PINTO	33054	104	93	85	82
79-80	MAZDA	GLC	6048	113			
78-80	HONDA	CIVIC	16269	119	130	146	
78-80	SPORTS		51502	120	130	133	136
78-80	FIAT	SPIDER 2000	5136	105			
79-80	DATSUN	280ZX	11577	112	126		
78-80	MG	MGB	7098	116			
79-80	MAZDA	RX7	18088	132	142	146	

(See footnotes on page 14.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART C: SUBCOMPACT CARS (96 IN. < WHEELBASE ≤ 101 IN.)

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
78-80	ALL	SUBCOMPACT	865479	115	114	113	114
78-80	REGULAR TWO-DOOR MODELS		533795	122	123	120	118
78-80	VOLKSWAGEN	DASHER*	13116	91	96		
78-80	PONTIAC	SUNBIRD	72686	112	114	109	111
79-80	MAZDA	626*	8354	115			
79-80	PLYMOUTH	HORIZON	22782	120	117	111	
78-80	TOYOTA	CELICA	93616	120	123	126	121
78-80	BUICK	SKYHAWK	13780	120	122		
78-80	CHEVROLET	MONZA	99151	121	120	115	107
79-80	MERCURY	CAPRI	30172	122	120	122	121
79-80	FORD	MUSTANG	109383	128	130	133	121
78-80	OLDSMOBILE	STARFIRE	13539	128	123		
79-80	DODGE	OMNI	18214	142	139	143	
78-80	PLYMOUTH	SAPPORO	6941	149			
80	TOYOTA	COROLLA TERCEL	9378	153			
78-80	FIAT	BRAVA*	6572	156			
78-80	DODGE	CHALLENGER	7717	162			
78-80	REGULAR FOUR-DOOR MODELS		281224	108	104	104	107
78-80	DODGE	OMNI	54094	104	104	107	114
79-80	TOYOTA	CORONA*	10513	106	97		
78-80	PLYMOUTH	HORIZON	75337	106	112	115	114
78-80	CHEVROLET	CHEVETTE	141280	110	103	98	100
78-80	STATION WAGONS		16974	85	90	87	
78-80	AMERICAN	PACER	6429	81			
78-80	VOLKSWAGEN	DASHER	7209	87			
78-80	SPORTS		33486	87	100	109	121
78-80	CHEVROLET	CORVETTE	28788	81	97	107	125

(See footnotes on page 14.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART D: SMALL COMPACT CARS (101 IN. < WHEELBASE ≤ 106 IN.)

MODEL YEARS	MAKE	SERIES	EXPOSURE	----- SIZE OF CLAIM -----			
				ALL	>\$250	>\$500	>\$1000
78-80	ALL	SMALL COMPACT	437341	101	97	96	93
<u>78-80</u>	<u>REGULAR TWO-DOOR MODELS</u>		<u>184365</u>	<u>110</u>	<u>109</u>	<u>107</u>	<u>104</u>
80	BUICK	SKYLARK	7291	80			
80	CHEVROLET	CITATION	17627	98	93	83	
78-80	FORD	FAIRMONT	110624	111	110	113	111
78-80	MERCURY	ZEPHYR	35194	120	122	113	107
79-80	TOYOTA	CELICA SUPRA	5607	128			
<u>78-80</u>	<u>REGULAR FOUR-DOOR MODELS</u>		<u>160500</u>	<u>96</u>	<u>91</u>	<u>91</u>	<u>96</u>
80	OLDSMOBILE	OMEGA	5164	66			
78-80	AUDI	5000	13606	80	74		
80	CHEVROLET	CITATION	23166	83	77	63	
80	BUICK	SKYLARK	10989	89	72		
80	PONTIAC	PHOENIX	6429	98			
78-80	FORD	FAIRMONT	69666	101	100	100	104
78-80	MERCURY	ZEPHYR	22442	102	93	100	
78-80	TOYOTA	CRESSIDA	5350	108			
<u>78-80</u>	<u>STATION WAGONS</u>		<u>92477</u>	<u>89</u>	<u>80</u>	<u>80</u>	<u>75</u>
78-80	MERCURY	ZEPHYR	15996	80	74	61	
78-80	FORD	FAIRMONT	71377	90	83	83	75

(See footnotes on page 14.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART E: COMPACT CARS (106 IN. < WHEELBASE ≤ 111 IN.)

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
78-80	ALL	COMPACT	1810493	98	99	98	100
78-80	REGULAR TWO-DOOR MODELS		753898	97	99	98	96
78-80	PONTIAC	LEMANS	21138	92	84	80	
78-80	MERCURY	MONARCH	17682	92	100	89	
78-80	OLDSMOBILE	CUTLASS	293757	92	94	93	89
78-80	BUICK	CENTURY	8220	93			
78-80	CHEVROLET	MALIBU	81209	97	91	89	89
78-80	BUICK	REGAL	173645	100	106	107	111
78-80	AMERICAN	CONCORD	33516	102	100	98	104
78-80	FORD	GRANADA	55225	102	103	102	93
78-80	PLYMOUTH	VOLARE	36161	107	101	96	93
78-80	DODGE	ASPEN	26237	112	101	104	96
78-80	REGULAR FOUR-DOOR MODELS		273120	87	87	83	82
78-80	PONTIAC	LEMANS	26948	79	83	85	86
78-80	OLDSMOBILE	CUTLASS	35941	80	86	89	89
78-80	BUICK	CENTURY	21331	83	74	65	
78-80	CHEVROLET	MALIBU	84144	88	83	80	86
78-80	FORD	GRANADA	60899	88	88	80	82
78-80	MERCURY	MONARCH	23254	96	104	100	
78-80	AMERICAN	CONCORD	19811	102	103	91	
78-80	STATION WAGONS		159577	78	70	72	71
78-80	OLDSMOBILE	CUTLASS	31627	65	64	67	68
78-80	BUICK	CENTURY	22062	76	59	57	
78-80	CHEVROLET	MALIBU	65679	78	70	67	64
78-80	PONTIAC	LEMANS	23031	84	74	85	
78-80	AMERICAN	CONCORD	14811	97	100		
78-80	SPECIALTY		623898	107	112	115	114
78-80	LINCOLN	VERSAILLES	6376	74			
78-80	PONTIAC	GRAND PRIX	147257	98	101	104	104
78-80	CHEVROLET	MONTE CARLO	200561	109	116	120	121
78-80	PONTIAC	FIREBIRD	104533	113	116	120	125
78-80	CHEVROLET	CAMARO	149811	113	114	115	114
80	FORD	THUNDERBIRD	11309	121	120		

(See footnotes on page 14.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART F: INTERMEDIATE CARS (111 IN. < WHEELBASE < 120 IN.)

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
78-80	ALL	INTERMEDIATE	1184583	78	80	80	82
<u>78-80</u>	<u>REGULAR TWO-DOOR MODELS</u>		<u>233359</u>	<u>83</u>	<u>90</u>	<u>93</u>	<u>93</u>
78-80	BUICK	LESABRE	34687	75	75	74	71
78-80	OLDSMOBILE	NINETY EIGHT	17288	77	106	122	
78-80	PONTIAC	BONNEVILLE	28643	80	80	85	79
78-80	CHEVROLET	CAPRICE	32939	83	77	85	89
79-80	MERCURY	MARQUIS	5814	84			
78-80	OLDSMOBILE	DELTA 88	49024	84	93	98	96
78-80	CHEVROLET	IMPALA	19086	85	87	96	
79-80	FORD	LTD	19964	88	101	102	
78-80	BUICK	ELECTRA	21004	100	123	122	
<u>78-80</u>	<u>REGULAR FOUR-DOOR MODELS</u>		<u>663597</u>	<u>77</u>	<u>78</u>	<u>76</u>	<u>79</u>
78-80	OLDSMOBILE	NINETY EIGHT	44223	62	70	74	75
78-80	OLDSMOBILE	DELTA 88	87667	69	70	72	68
78-80	PONTIAC	CATALINA	16901	69	75	78	
78-80	BUICK	LESABRE	59241	73	71	70	64
78-80	PONTIAC	BONNEVILLE	52551	73	77	74	71
79-80	MERCURY	MARQUIS	15165	74	72	63	
78-80	CHEVROLET	CAPRICE	105742	76	78	78	82
78-80	BUICK	ELECTRA	36015	78	80	80	82
79-80	FORD	LTD	30075	78	78	80	79
79-80	CHRYSLER	NEWPORT	9942	80			
78-80	DODGE	DIPLOMAT	12306	81	74		
78-80	CHEVROLET	IMPALA	74873	84	86	87	96
78-80	DODGE	ASPEN	33056	84	75	70	64
79-80	DODGE	ST. REGIS	5423	87			
78-80	CHRYSLER	LE BARON	30993	88	83	74	93
79-80	CHRYSLER	NEW YORKER	8311	89			
78-80	PLYMOUTH	VOLARE	40942	93	88	89	89

(See footnotes on page 14.)

TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART F: INTERMEDIATE CARS (111 IN. < WHEELBASE < 120 IN.)(CONTD)

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
<u>78-80</u>	<u>STATION WAGONS</u>		<u>213429</u>	<u>75</u>	<u>70</u>	<u>67</u>	<u>68</u>
78-80	OLDSMOBILE	CUSTOM CRUISER	18210	58	58	57	
78-80	BUICK	ESTATE	11760	62	52		
78-80	PONTIAC	BONNEVILLE	8967	67			
78-80	CHEVROLET	CAPRICE	32359	67	61	63	57
78-80	CHRYSLER	LE BARON	11858	71	72		
78-80	DODGE	DIPLOMAT	5503	74			
78-80	PONTIAC	CATALINA	7220	75			
78-80	CHEVROLET	IMPALA	31960	76	75	80	82
79-80	FORD	LTD	12316	79	80		
78-80	PLYMOUTH	VOLARE	39562	87	72	67	71
78-80	DODGE	ASPEN	30422	89	87	80	82
<u>78-80</u>	<u>SPECIALTY</u>		<u>74198</u>	<u>77</u>	<u>88</u>	<u>89</u>	<u>93</u>
79-80	OLDSMOBILE	TORONADO	12206	58	61		
79-80	BUICK	RIVIERA	14853	75	90		
78-80	CADILLAC	SEVILLE	21169	79	90	91	
79-80	CADILLAC	ELDORADO	16537	80	90	100	

(See footnotes on page 14.)

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TABLE 3
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART G: FULL-SIZE CARS (WHEELBASE > 120 IN.)

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM			
				ALL	>\$250	>\$500	>\$1000
78-80	ALL	FULL-SIZE	141801	81	100	107	114
78-80	SPECIALTY		141801	81	100	107	114
78-80	CADILLAC	DE VILLE 4D	50371	74	90	93	104
78-80	CADILLAC	BROUGHAM 4D	16700	82	88	100	
78-80	CADILLAC	DE VILLE 2D	74531	86	110	120	121

FOOTNOTES FOR TABLE 3

RESULTS ARE STANDARDIZED TO THE DISTRIBUTION:

YOUTHFUL	NO YOUTHFUL
OPERATOR	OPERATOR
15%	85%

MINIMUM EXPOSURE REQUIREMENTS FOR REPORTING:

ALL CLAIMS	-	5,000 VEHICLE YEARS
CLAIMS > \$250	-	10,000 VEHICLE YEARS
CLAIMS > \$500	-	15,000 VEHICLE YEARS
CLAIMS > \$1000	-	25,000 VEHICLE YEARS

* BODY STYLE IS NOT DETERMINABLE FROM VEHICLE IDENTIFICATION NUMBER.

** INSUFFICIENT DATA TO COMPUTE STANDARDIZED RESULT.

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Figure 2
Personal Injury Protection Coverages
Relative Claim Frequencies by Size of Claim
1978-1980 Models

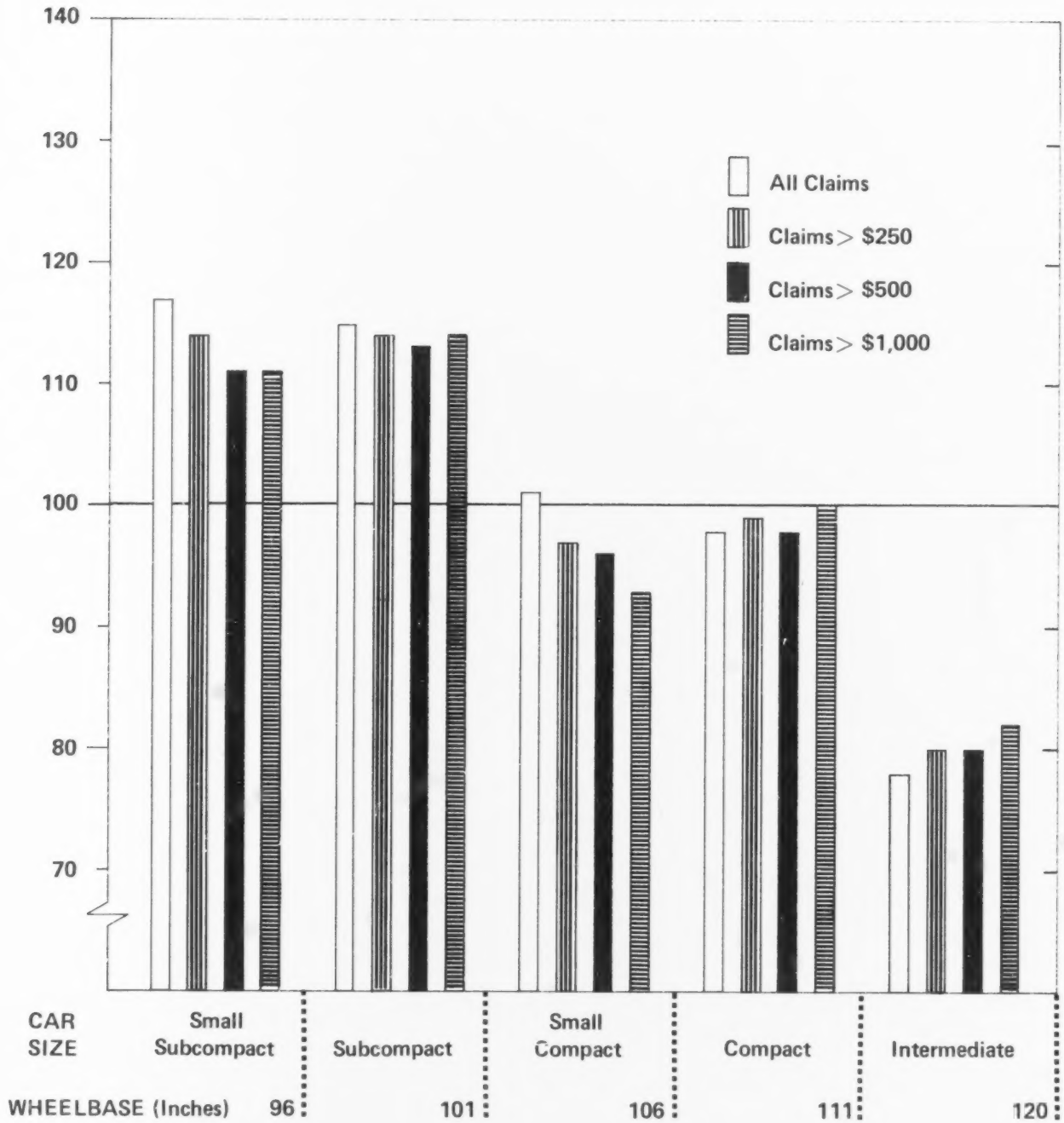
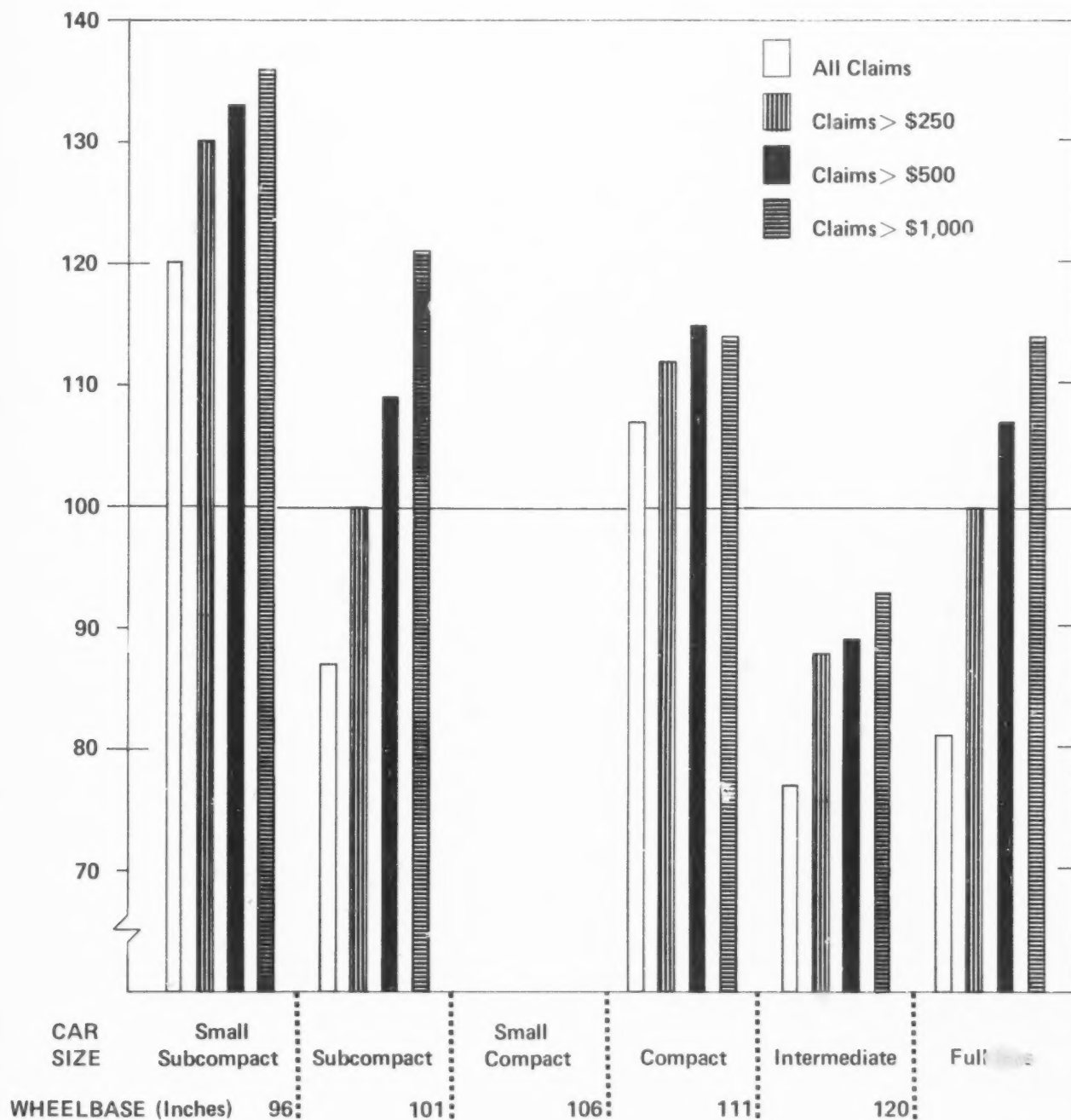


Figure 3
Personal Injury Protection Coverages
Relative Claim Frequencies by Size of Claim
1978-1980 Sports and Specialty Models



Appendix A

Specifications of Injury Coverages

Personal Injury Protection (PIP) Coverages

Personal injury protection coverages provide first-party insurance against medical and other types of losses in "no-fault" states.

The personal injury protection coverages reported in this study were based on data from the 19 states listed below.

PERSONAL INJURY PROTECTION (PIP) COVERAGES STATES INCLUDED

Colorado	Minnesota
Connecticut	New Jersey
Delaware	New York
Florida	North Dakota
Georgia	Oregon
Hawaii	Pennsylvania
Kansas	South Carolina
Kentucky	Texas
Maryland	Utah
Michigan	

Appendix B

Method Of Data Analysis

Personal Injury Protection Coverages

Results in this report are based on "personal injury protection" (PIP) coverages which are provided in so-called no-fault states. These coverages were selected because they provide medical expense reimbursement to injured occupants of the insured vehicle.

Use of PIP insurance data to identify crashes involving injury has certain limitations because these data cannot provide information on all occupant injuries. This occurs when claims for injury costs are not made under PIP coverages because of the availability of other sources of medical expense reimbursements, such as bodily injury liability and/or health insurance coverages. Consequently, PIP claim frequencies do not include all of the crashes involving injury. This limitation should not distort comparisons among different vehicles.

Vehicle Description and Identification

The Vehicle Identification Numbers (VINs) of most new automobiles sold in the United States are individually unique numbers that contain, in coded form, detailed information as to each vehicle's make, model year, series,* and other distinguishing characteristics.

The very specific vehicle types for which results are presented in this report were derived from the VINs of the individual automobiles.

Only data with valid VINs were used for this report. Each VIN was decoded into a set of specific characteristics. For the purposes of this report the vehicle characteristics of primary concern were make, model year, series, body style, and wheelbase.

Exposure

Exposure, in terms of insured vehicle years, was computed for each individual vehicle from the coverage data. The total number of insured vehicle years for each vehicle series was then obtained by accumulating the exposure for all of the individual vehicles of that vehicle series.

For each vehicle series, the exposure was also computed for each operator age group – youthful operators and no youthful operators.*

Claim Frequency

Both pending and paid claims for an individual vehicle were first matched with its corresponding coverage data to ensure that the crash had occurred within an appropriate period of coverage for that vehicle. In every instance in which multiple claims were made for the same crash – *e.g.*, when more than one occupant of the car incurred medical expenses – the claims were treated as a single injury claim in the calculation of claim frequencies. It should be noted that some medical expenses can sometimes be incurred even though the occupants are not injured. This can occur, for example, when precautionary medical examinations are undertaken even though no injuries are apparent, or, in fact, found.

* See Appendix C for definitions.

All injury claims involving medical expense reimbursements were used, together with the corresponding exposure, to compute the claim frequencies in terms of the number of claims per 1,000 insured vehicle years. The overall claim frequency results were computed using both paid and pending claims. In addition to the overall claim frequency results, separate claim frequency results were computed for claims in which the medical losses exceeded \$250, \$500, and \$1,000. The latter three results provide indications of the extent to which particular cars are over- or under-involved in crashes resulting in more significant injuries. Claims involving non-medical losses only and claims settled without payments were not used. Thus, the claim frequencies represent the number of crashes per 1,000 insured vehicle years in which one or more injuries occurred resulting in medical expense claim payments under PIP insurance coverages.

Standardization

The losses for different vehicles can vary substantially in relation to certain non-vehicle factors. One important factor with which claim frequency varies is the operator age group; and the mix of operator ages can vary considerably among different vehicle types – so considerably that it could distort comparisons of results between vehicles if not taken into account.

Youthful operators have higher insurance claim frequencies than older drivers. Thus, if two vehicle types have different proportions of youthful operators, this difference, if not taken into consideration, would be sufficient to bias comparisons. To remove this effect for each vehicle type, the results for each vehicle type were weighted, using the values shown below, to produce a weighted average of the actual results for each operator age group. In this way the results for each vehicle type are based on the same mix, or distribution, of exposure for the two operator age groups.

Since the same weights are used for each vehicle type, the effects due to operator age group are present in equal amounts in the standardized results for each vehicle type. Therefore, to the extent that the age distributions within operator age group do not vary substantially for different vehicles, these effects can no longer bias comparisons among vehicles.

This standardization procedure is widely used in vital health statistics.* The basic principle of this standardization procedure is the introduction of a standard distribution of exposure for the different operator age groups.

OPERATOR AGE GROUP WEIGHTS

Youthful Operator	No Youthful Operator	Combined
0.15	0.85	1.0

Exposure Threshold For Reporting Results

A threshold of 5,000 insured vehicle years of exposure was selected for reporting the overall claim frequency results for vehicle size classes, subgroups, and individual vehicle series. Consequently, no results are presented in this report for any of the vehicle series with smaller amounts of exposure. In addition, different thresholds were used to determine whether the claim frequency results for medical losses exceeding the specified dollar amounts were published. In order for the claim frequency results for medical losses

* For example, see Armitage, P., *Statistical Methods in Medical Research*, Wiley, New York, 1971.

exceeding \$250 to be published, at least 10,000 insured years of exposure were required; for medical losses of greater than \$500, the minimum exposure was 15,000, and for medical losses exceeding \$1,000, the minimum exposure was 25,000 insured vehicle years.

It should be kept in mind that, in general, the greater the exposure associated with a reported claim frequency, the more confidence can be placed in it.

Appendix C Definitions

Claim Frequency — The number of claims for a group of vehicles, divided by the exposure for that group; expressed as claims per one thousand insured vehicle years.

Exposure — The time interval an individual vehicle is insured. Exposure for a group of vehicles is expressed in units of insured vehicle years.

First-Party Coverage — An insurance coverage under which the policyholder collects compensation for his losses from his own insurer regardless of fault.

No-Fault Auto Insurance — An auto insurance plan in which each driver/owner accepts financial responsibility for some or all losses sustained by himself, pedestrians hit by him, and occupants of his own vehicle in return for which he enjoys some immunity from liability for losses to third-party persons.

Operator Age Group — The factor which distinguishes those vehicles whose rated driver is youthful from those vehicles whose rated driver is not youthful (see *Youthful Operator*).

Personal Injury Protection (PIP) Coverage — First-party no-fault coverage in which an insurer pays, within the specified limits, the medical, hospital, and other expenses of the insured, others in his vehicle, and pedestrians struck by him.

Rated Driver — The driver who, for insurance purposes, is considered to represent the greatest loss potential for the insured automobile.

Vehicle Identification Number (VIN) — A code, variously comprising both numbers and letters, normally between 8 and 17 characters in length, assigned to each automobile by its manufacturer. The VIN uniquely identifies the vehicle within at least a ten-year time span and, in recent model year vehicles, contains coding which identifies the make, series, model year, and other characteristics of each vehicle.

Vehicle Series — A name denoting a family of vehicles, within a make, with the same wheelbase and a degree of commonality in construction such as body, chassis, etc.

Vehicle Size Group — A grouping of vehicles based on wheelbase. There are six car size groups defined as follows:

Small Subcompact — Vehicles with wheelbases less than or equal to 96 inches.

Subcompact — Vehicles with wheelbases greater than 96 inches and less than or equal to 101 inches.

Small Compact — Vehicles with wheelbases greater than 101 inches and less than or equal to 106 inches.

Compact — Vehicles with wheelbases greater than 106 inches and less than or equal to 111 inches.

Intermediate — Vehicles with wheelbases greater than 111 inches and less than or equal to 120 inches.

Full-Size — Vehicles with wheelbases greater than 120 inches.

Each vehicle size group is further divided into four subgroups — regular two-door models, regular four-door models, station wagons, and sports or specialty models. In the small compact, compact, intermediate, and full-size groups, the specialty models are those that either have *only* two-door models or are luxury cars. The sports subgroup in the two subcompact size classes are sports models which are basically two-seater cars.

Youthful Operator — For the purposes of this report, all males (married or single) under 25 years of age and all unmarried females under 25 years of age.

Appendix D

TABLE D1
OVERALL CLAIM FREQUENCY DETAILS BY MAKE & SERIES AND OPERATOR AGE GROUP
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART A: ALL CARS

MODEL YEARS	MAKE	SERIES	YOUTHFUL OPERATOR			NO YOUTHFUL OPERATOR			CLAIM FREQUENCY	
			EXPOSURE	CLAIMS	FREQ	EXPOSURE	CLAIMS	FREQ	COMB	STD
78-80	ALL	ALL	760296	20439	26.9	4694504	75967	16.2	17.7	17.8

(See footnotes on page 31.)

TABLE D1
OVERALL CLAIM FREQUENCY DETAILS BY MAKE & SERIES AND OPERATOR AGE GROUP
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART B: SMALL SUBCOMPACT CARS (WHEELBASE < 96 IN.)

MODEL YEARS	MAKE	SERIES	YOUTHFUL OPERATOR			NO YOUTHFUL OPERATOR			CLAIM FREQUENCY	
			EXPOSURE	CLAIMS	FREQ	EXPOSURE	CLAIMS	FREQ	COMB	STD
78-80	ALL	SMALL SUBCOMPACT	182418	5575	30.6	832686	15912	19.1	21.2	20.8
78-80	REGULAR TWO-DOOR MODELS		164509	5063	30.8	683516	13232	19.4	21.6	21.1
78-80	VOLKSWAGEN	RABBIT*	18337	376	20.5	145714	2224	15.3	15.8	16.0
78-80	HONDA	ACCORD	9519	233	24.5	60586	1049	17.3	18.3	18.4
78-80	VOLKSWAGEN	SCIROCCO	3801	96	25.3	16438	304	18.5	19.8	19.5
79-80	AMERICAN	SPIRIT	5000	154	30.8	14763	260	17.6	20.9	19.6
78-80	DATSUN	510*	2866	68	23.7	19938	385	19.3	19.9	20.0
78-80	CHEVROLET	CHEVETTE	25625	785	30.6	81641	1597	19.6	22.2	21.2
78-80	FORD	PINTO	23733	746	31.4	67442	1324	19.6	22.7	21.4
78-80	FORD	FIESTA	6598	233	35.3	30790	624	20.3	22.9	22.5
79-80	DODGE	COLT (FWD)	2158	73	33.8	10051	208	20.7	23.0	22.7
79-80	DATSUN	310*	4938	165	33.4	17423	362	20.8	23.6	22.7
80	TOYOTA	COROLLA*	3047	105	34.5	16398	347	21.2	23.2	23.2
78-80	MERCURY	BOBCAT	5192	168	32.4	13944	305	21.9	24.7	23.4
79-80	PLYMOUTH	CHAMP	1880	68	36.2	8914	194	21.8	24.3	23.9
78-80	DATSUN	210*	17780	604	34.0	64839	1440	22.2	24.7	24.0
78-80	HONDA	CIVIC	18113	629	34.7	62057	1378	22.2	25.0	24.1
78-80	MAZDA	GLC*	6606	224	33.9	26651	615	23.1	25.2	24.7
79-80	HONDA	PRELUDE	2326	78	33.5	9599	225	23.4	25.4	25.0
78-80	PLYMOUTH	ARROW	5281	202	38.3	9122	222	24.3	29.4	26.4
80	DATSUN	200SX	1295	48	37.1	5864	146	24.9	27.1	26.7
78-80	REGULAR FOUR-DOOR MODELS		1734	30	17.3	16947	280	16.5	16.6	16.6
79-80	HONDA	ACCORD	1734	30	17.3	16947	280	16.5	16.6	16.6
78-80	STATION WAGONS		7939	214	27.0	88956	1562	17.6	18.3	19.0
78-80	MERCURY	BOBCAT	474	16	33.7	5165	74	14.3	16.0	17.2
79-80	DATSUN	210	1246	30	24.1	17759	308	17.3	17.8	18.4
78-80	DATSUN	510	976	27	27.7	15904	269	16.9	17.5	18.5
78-80	FORD	PINTO	3456	88	25.5	29598	514	17.4	18.2	18.6
79-80	MAZDA	GLC	435	11	25.3	5612	108	19.2	19.7	20.1
78-80	HONDA	CIVIC	1351	42	31.1	14918	289	19.4	20.3	21.1
78-80	SPORTS		8237	268	32.5	43266	838	19.4	21.5	21.3
78-80	FIAT	SPIDER 2000	682	18	26.4	4454	77	17.3	18.5	18.7
79-80	DATSUN	280ZX	1566	52	33.2	10011	176	17.6	19.7	19.9
78-80	MG	MGB	1399	37	26.4	5699	112	19.7	21.0	20.7
79-80	MAZDA	RX7	3146	106	33.7	14942	325	21.8	23.8	23.5

(See footnotes on page 31.)

TABLE D1
OVERALL CLAIM FREQUENCY DETAILS BY MAKE & SERIES AND OPERATOR AGE GROUP
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART C: SUBCOMPACT CARS (96 IN. < WHEELBASE ≤ 101 IN.)

MODEL YEARS	MAKE	SERIES	YOUTHFUL OPERATOR			NO YOUTHFUL OPERATOR			CLAIM FREQUENCY	
			EXPOSURE	CLAIMS	FREQ	EXPOSURE	CLAIMS	FREQ	COMB	STD
78-80	ALL	SUBCOMPACT	187528	5476	29.2	677951	12861	19.0	21.2	20.5
78-80	REGULAR TWO-DOOR MODELS		145600	4328	29.7	388194	7908	20.4	22.9	21.8
78-80	VOLKSWAGEN	DASHER*	1008	29	28.8	12108	170	14.0	15.2	16.2
78-80	PONTIAC	SUNBIRD	23833	637	26.7	48853	918	18.8	21.4	20.0
79-80	MAZDA	626*	1210	28	23.1	7144	143	20.0	20.5	20.5
79-80	PLYMOUTH	HORIZON	5012	153	30.5	17770	349	19.6	22.0	21.3
78-80	TOYOTA	CELICA	19958	590	29.6	73658	1465	19.9	22.0	21.3
78-80	BUICK	SKYHAWK	3790	113	29.8	9990	199	19.9	22.6	21.4
78-80	CHEVROLET	MONZA	34876	1002	28.7	64275	1304	20.3	23.3	21.6
79-80	MERCURY	CAPRI	8710	267	30.7	21462	435	20.3	23.3	21.8
79-80	FORD	MUSTANG	31386	997	31.8	77998	1646	21.1	24.2	22.7
78-80	OLDSMOBILE	STARFIRE	4421	132	29.9	9118	196	21.5	24.2	22.8
79-80	DODGE	OMNI	3914	125	31.9	14301	343	24.0	25.7	25.2
78-80	PLYMOUTH	SAPPORO	1470	64	43.5	5471	129	23.6	27.8	26.6
80	TOYOTA	COROLLA TERCEL	1648	61	37.0	7730	197	25.5	27.5	27.2
78-80	FIAT	BRAVA*	1193	42	35.2	5380	142	26.4	28.0	27.7
78-80	DODGE	CHALLENGER	2133	67	31.4	5584	159	28.5	29.3	28.9
78-80	REGULAR FOUR-DOOR MODELS		37911	1047	27.6	243313	4322	17.8	19.1	19.2
78-80	DODGE	OMNI	6511	156	24.0	47583	838	17.6	18.4	18.6
79-80	TOYOTA	CORONA*	706	12	17.0	9807	188	19.2	19.0	18.8
78-80	PLYMOUTH	HORIZON	9235	247	26.7	66102	1154	17.5	18.6	18.9
78-80	CHEVROLET	CHEVETTE	21459	632	29.5	119821	2142	17.9	19.6	19.6
78-80	STATION WAGONS		1108	29	26.2	15866	211	13.3	14.1	15.2
78-80	AMERICAN	PACER	419	12	28.6	6010	72	12.0	13.1	14.5
78-80	VOLKSWAGEN	DASHER	466	10	21.4	6742	97	14.4	14.8	15.4
78-80	SPORTS		2908	72	24.8	30578	420	13.7	14.7	15.4
78-80	CHEVROLET	CORVETTE	2620	60	22.9	26168	340	13.0	13.9	14.5

(See footnotes on page 31.)

TABLE D1
OVERALL CLAIM FREQUENCY DETAILS BY MAKE & SERIES AND OPERATOR AGE GROUP
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART D: SMALL COMPACT CARS (101 IN. < WHEELBASE < 106 IN.)

MODEL YEARS	MAKE	SERIES	YOUTHFUL OPERATOR			NO YOUTHFUL OPERATOR			CLAIM FREQUENCY	
			EXPOSURE	CLAIMS	FREQ	EXPOSURE	CLAIMS	FREQ	COMB	STD
78-80	ALL	SMALL COMPACT	43904	1109	25.3	393437	6516	16.6	17.4	17.9
78-80	REGULAR TWO-DOOR MODELS		25952	687	26.5	158413	2908	18.4	19.5	19.6
80	BUICK	SKYLARK	813	12	14.8	6478	91	14.0	14.1	14.2
80	CHEVROLET	CITATION	2233	49	21.9	15395	257	16.7	17.4	17.5
78-80	FORD	FAIRMONT	15775	419	26.6	94849	1749	18.4	19.6	19.7
78-80	MERCURY	ZEPHYR	5584	167	29.9	29610	588	19.9	21.5	21.4
79-80	TOYOTA	CELICA SUPRA	604	20	33.1	5002	105	21.0	22.3	22.8
78-80	REGULAR FOUR-DOOR MODELS		12619	294	23.3	147881	2358	15.9	16.5	17.0
80	OLDSMOBILE	OMEGA	334	5	15.0	4830	54	11.2	11.4	11.8
78-80	AUDI	5000	838	10	11.9	12768	188	14.7	14.6	14.3
80	CHEVROLET	CITATION	1730	39	22.5	21436	286	13.3	14.0	14.7
80	BUICK	SKYLARK	745	16	21.5	10244	152	14.8	15.3	15.8
80	PONTIAC	PHOENIX	447	9	20.1	5982	102	17.1	17.3	17.5
78-80	FORD	FAIRMONT	5980	152	25.4	63686	1061	16.7	17.4	18.0
78-80	MERCURY	ZEPHYR	1953	49	25.1	20489	346	16.9	17.6	18.1
78-80	TOYOTA	CRESSIDA	319	5	15.7	5031	100	19.9	19.6	19.2
78-80	STATION WAGONS		5334	128	24.0	87143	1250	14.3	14.9	15.8
78-80	MERCURY	ZEPHYR	900	23	25.6	15096	186	12.3	13.1	14.3
78-80	FORD	FAIRMONT	4206	101	24.0	67170	978	14.6	15.1	16.0

(See footnotes on page 31.)

TABLE D1
OVERALL CLAIM FREQUENCY DETAILS BY MAKE & SERIES AND OPERATOR AGE GROUP
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART E: COMPACT CARS (106 IN. < WHEELBASE < 111 IN.)

MODEL YEARS	MAKE	SERIES	YOUTHFUL OPERATOR			NO YOUTHFUL OPERATOR			CLAIM FREQUENCY	
			EXPOSURE	CLAIMS	FREQ	EXPOSURE	CLAIMS	FREQ	COMB	STD
78-80	ALL	COMPACT	271745	6735	24.8	1538748	24703	16.1	17.4	17.4
78-80	REGULAR TWO-DOOR MODELS		94479	2256	23.9	659419	10626	16.1	17.1	17.3
78-80	PONTIAC	LEMANS	2742	76	27.7	18396	262	14.2	16.0	16.3
78-80	MERCURY	MONARCH	2238	51	22.8	15444	234	15.2	16.1	16.3
78-80	OLDSMOBILE	CUTLASS	35685	792	22.2	258073	3942	15.3	16.1	16.3
78-80	BUICK	CENTURY	737	14	19.0	7482	120	16.0	16.3	16.5
78-80	CHEVROLET	MALIBU	9805	230	23.5	71403	1160	16.2	17.1	17.3
78-80	BUICK	REGAL	18862	445	23.6	154783	2601	16.8	17.5	17.8
78-80	AMERICAN	CONCORD	4912	135	27.5	28603	470	16.4	18.1	18.1
78-80	FORD	GRANADA	7021	173	24.6	48204	819	17.0	18.0	18.1
78-80	PLYMOUTH	VOLARE	6746	177	26.2	29414	524	17.8	19.4	19.1
78-80	DODGE	ASPEN	4720	146	30.9	21517	387	18.0	20.3	19.9
78-80	REGULAR FOUR-DOOR MODELS		20245	444	21.9	252874	3635	14.4	14.9	15.5
78-80	PONTIAC	LEMANS	1997	46	23.0	24951	312	12.5	13.3	14.1
78-80	OLDSMOBILE	CUTLASS	2274	50	22.0	33667	433	12.9	13.4	14.2
78-80	BUICK	CENTURY	1279	28	21.9	20052	270	13.5	14.0	14.7
78-80	CHEVROLET	MALIBU	6343	127	20.0	77801	1152	14.8	15.2	15.6
78-80	FORD	GRANADA	4869	106	21.8	56030	815	14.5	15.1	15.6
78-80	MERCURY	MONARCH	1807	42	23.2	21447	341	15.9	16.5	17.0
78-80	AMERICAN	CONCORD	1623	42	25.9	18188	305	16.8	17.5	18.1
78-80	STATION WAGONS		8750	175	20.0	150826	1917	12.7	13.1	13.8
78-80	OLDSMOBILE	CUTLASS	1655	30	18.1	29973	311	10.4	10.8	11.5
78-80	BUICK	CENTURY	1294	31	24.0	20768	241	11.6	12.3	13.5
78-80	CHEVROLET	MALIBU	3614	68	18.8	62065	804	13.0	13.3	13.8
78-80	PONTIAC	LEMANS	1239	25	20.2	21792	305	14.0	14.3	14.9
78-80	AMERICAN	CONCORD	808	19	23.5	14003	225	16.1	16.5	17.2
78-80	SPECIALTY		148270	3860	26.0	475628	8525	17.9	19.9	19.1
78-80	LINCOLN	VERSAILLES	303	6	19.8	6072	73	12.0	12.4	13.2
78-80	PONTIAC	GRAND PRIX	17896	427	23.9	129361	2119	16.4	17.3	17.5
78-80	CHEVROLET	MONTE CARLO	28401	750	26.4	172160	3123	18.1	19.3	19.4
78-80	PONTIAC	FIREBIRD	38146	952	25.0	66388	1276	19.2	21.3	20.1
78-80	CHEVROLET	CAMARO	62179	1684	27.1	87632	1652	18.9	22.3	20.1
80	FORD	THUNDERBIRD	935	27	28.9	10374	210	20.2	21.0	21.5

(See footnotes on page 31.)

TABLE D1
OVERALL CLAIM FREQUENCY DETAILS BY MAKE & SERIES AND OPERATOR AGE GROUP
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART F: INTERMEDIATE CARS (111 IN. < WHEELBASE ≤ 120 IN.)

MODEL YEARS	MAKE	SERIES	YOUTHFUL OPERATOR			NO YOUTHFUL OPERATOR			CLAIM FREQUENCY	
			EXPOSURE	CLAIMS	FREQ	EXPOSURE	CLAIMS	FREQ	COMB	STD
78-80	ALL	INTERMEDIATE	69397	1430	20.6	1115185	14174	12.7	13.2	13.9
78-80	REGULAR TWO-DOOR MODELS		14256	315	22.1	219103	2959	13.5	14.0	14.8
78-80	BUICK	LESABRE	2126	36	16.9	32562	414	12.7	13.0	13.3
78-80	OLDSMOBILE	NINETY EIGHT	795	16	20.1	16493	208	12.6	13.0	13.7
78-80	PONTIAC	BONNEVILLE	1849	36	19.5	26794	355	13.2	13.7	14.2
78-80	CHEVROLET	CAPRICE	2297	36	15.7	30642	449	14.7	14.7	14.8
79-80	MERCURY	MARQUIS	318	10	31.5	5496	66	12.0	13.1	14.9
78-80	OLDSMOBILE	DELTA 88	2924	80	27.4	46101	591	12.8	13.7	15.0
78-80	CHEVROLET	IMPALA	1416	42	29.7	17671	224	12.7	13.9	15.2
79-80	FORD	LTD	1310	24	18.3	18654	281	15.1	15.3	15.6
78-80	BUICK	ELECTRA	952	28	29.4	20051	316	15.8	16.4	17.8
78-80	REGULAR FOUR-DOOR MODELS		38665	781	20.2	624932	7869	12.6	13.0	13.7
78-80	OLDSMOBILE	NINETY EIGHT	2220	29	13.1	42003	448	10.7	10.8	11.0
78-80	OLDSMOBILE	DELTA 88	4761	83	17.4	82906	932	11.2	11.6	12.2
78-80	PONTIAC	CATALINA	973	18	18.5	15928	178	11.2	11.6	12.3
78-80	BUICK	LESABRE	3154	62	19.7	56087	661	11.8	12.2	13.0
78-80	PONTIAC	BONNEVILLE	2892	41	14.2	49659	634	12.8	12.8	13.0
79-80	MERCURY	MARQUIS	779	13	16.7	14386	179	12.4	12.7	13.1
78-80	CHEVROLET	CAPRICE	6472	118	18.2	99270	1268	12.8	13.1	13.6
78-80	BUICK	ELECTRA	1756	39	22.2	34258	421	12.3	12.8	13.8
79-80	FORD	LTD	1681	32	19.0	28394	369	13.0	13.3	13.9
79-80	CHRYSLER	NEWPORT	532	12	22.6	9410	121	12.9	13.4	14.3
78-80	DODGE	DIPLOMAT	761	14	18.4	11545	158	13.7	14.0	14.4
78-80	CHEVROLET	IMPALA	4760	119	25.0	70113	925	13.2	13.9	15.0
78-80	DODGE	ASPEN	2334	58	24.8	30722	409	13.3	14.1	15.0
79-80	DODGE	ST. REGIS	314	3	9.6	5109	84	16.4	16.0	15.4
78-80	CHRYSLER	LE BARON	1812	35	19.3	29181	439	15.0	15.3	15.7
79-80	CHRYSLER	NEW YORKER	412	12	29.1	7898	107	13.5	14.3	15.9
78-80	PLYMOUTH	VOLARE	3043	93	30.6	37899	535	14.1	15.3	16.6
78-80	STATION WAGONS		12898	269	20.9	200532	2433	12.1	12.7	13.4
78-80	OLDSMOBILE	CUSTOM CRUISER	1112	16	14.4	17097	164	9.6	9.9	10.3
78-80	BUICK	ESTATE	725	16	22.1	11034	101	9.2	9.9	11.1
78-80	PONTIAC	BONNEVILLE	596	10	16.8	8372	92	11.0	11.4	11.9
78-80	CHEVROLET	CAPRICE	1862	28	15.0	30497	350	11.5	11.7	12.0
78-80	CHRYSLER	LE BARON	631	12	19.0	11226	129	11.5	11.9	12.6
78-80	DODGE	DIPLOMAT	251	7	27.9	5252	56	10.7	11.4	13.2
78-80	PONTIAC	CATALINA	465	14	30.1	6755	71	10.5	11.8	13.4
78-80	CHEVROLET	IMPALA	2095	50	23.9	29865	353	11.8	12.6	13.6
79-80	FORD	LTD	850	18	21.2	11466	147	12.8	13.4	14.1
78-80	PLYMOUTH	VOLARE	2282	47	20.6	37280	543	14.6	14.9	15.5
78-80	DODGE	ASPEN	1816	47	25.9	28605	403	14.1	14.8	15.9
78-80	SPECIALTY		3579	65	18.2	70619	913	12.9	13.2	13.7
79-80	OLDSMOBILE	TORONADO	582	5	8.6	11624	125	10.8	10.7	10.4
79-80	BUICK	RIVIERA	814	11	13.5	14039	186	13.2	13.3	13.3
78-80	CADILLAC	SEVILLE	892	18	20.2	20278	262	12.9	13.2	14.0
79-80	CADILLAC	ELDORADO	614	13	21.2	15923	206	12.9	13.2	14.2

(See footnotes on page 31.)

TABLE D1
OVERALL CLAIM FREQUENCY DETAILS BY MAKE & SERIES AND OPERATOR AGE GROUP
PERSONAL INJURY PROTECTION COVERAGES 1978-1980 MODELS

PART G: FULL-SIZE CARS (WHEELBASE > 120 IN.)

MODEL YEARS	MAKE	SERIES	YOUTHFUL OPERATOR			NO YOUTHFUL OPERATOR			CLAIM FREQUENCY	
			EXPOSURE	CLAIMS	FREQ	EXPOSURE	CLAIMS	FREQ	COMB	STD
78-80	ALL	FULL-SIZE	5304	114	21.5	136498	1801	13.2	13.5	14.4
78-80	SPECIALTY		5304	114	21.5	136498	1801	13.2	13.5	14.4
78-80	CADILLAC	DE VILLE 4D	2040	38	18.6	48330	590	12.2	12.5	13.2
78-80	CADILLAC	BROUGHAM 4D	680	16	23.5	16019	208	13.0	13.4	14.6
78-80	CADILLAC	DE VILLE 2D	2575	60	23.3	71956	999	13.9	14.2	15.3

FOOTNOTES FOR TABLE D1

RESULTS ARE STANDARDIZED TO THE DISTRIBUTION:

YOUTHFUL	NO YOUTHFUL
OPERATOR	OPERATOR
15%	85%

MINIMUM EXPOSURE REQUIREMENTS FOR REPORTING:

ALL CLAIMS	-	5,000 VEHICLE YEARS
CLAIMS > \$250	-	10,000 VEHICLE YEARS
CLAIMS > \$500	-	15,000 VEHICLE YEARS
CLAIMS > \$1000	-	25,000 VEHICLE YEARS

* BODY STYLE IS NOT DETERMINABLE FROM VEHICLE IDENTIFICATION NUMBER.

List of Publications

Other research reports published by the Highway Loss Data Institute are:

- R72-1 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1972 Models, June 1973.*
- R73-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1973 Models Compared with 1972 Models, September 1973.*
- R73-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models, March 1974.*
- R73-3 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models During Their First Two Years, December 1974.*
- R73-4 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models During Their First Three Years, December 1975.*
- R74-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1974 Models, May 1974.*
- R74-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1974 Models During Their First Year, December 1974.*
- R74-3 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1974 Models During Their First Two Years, December 1975.*
- R75-1 *Automobile Insurance Losses, Collision Coverages, Initial Results for 1975 Models, July 1975.*
- R75-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1975 Models During Their First Year, December 1975.*
- R76-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1976 Models, June 1976.*
- R76-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1976 Models During Their First Year, 1975 Models During Their First Two Years, 1974 Models During Their First Three Years, December 1976.*
- R77-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1977 Models, June 1977.*
- R77-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1977 Models During Their First Year, 1976 Models During Their First Two Years, 1975 Models During Their First Three Years, December 1977.*
- R78-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1978 Models, June 1978.*
- R78-2 *Automobile Insurance Losses, Collision Coverages, Variations by Make and Series, 1978 Models During Their First Year, 1977 Models During Their First Two Years, 1976 Models During Their First Three Years, January 1979.*
- R79-1 *Automobile Insurance Losses, Collision Coverages, Initial Results for 1979 Models, June 1979.*

- R79-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1979 Models During Their First Year, 1978 Models During Their First Two Years, 1977 Models During Their First Three Years, December 1979.*
- R80-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1980 Models, June 1980.*
- R80-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1980 Models During Their First Year, 1979 Models During Their First Two Years, 1978 Models During Their First Three Years, December 1980.*
- R81-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1981 Models, July 1981.*
- V78-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups and Utility Vehicles, 1978 Models During Their First Year, 1977 Models During Their First Two Years, February 1979.*
- V79-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups and Utility Vehicles, 1979 Models During Their First Year, 1978 Models During Their First Two Years, April 1980.*
- V79-2 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1977, 1978, and 1979 Vans, Pickup Trucks, and Utility Vehicles, October 1980.*
- V79-3 *Insurance Theft Losses; Vans, Pickups, and Utility Vehicles, 1979 Models, May 1981.*
- V80-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups, and Utility Vehicles, 1980 Models During Their First Year, 1979 Models During Their First Two Years, 1978 Models During Their First Three Years, December 1980.*
- V80-2 *Automobile Insurance Losses, Personal Injury Protection Coverages; Injury Claim Frequency Results by Size of Claim; Vans, Pickup Trucks, and Utility Vehicles, 1977-1980 Models, September 1981.*
- I75-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974 and 1975 Models, June 1976.*
- I75-2 *Automobile Insurance Losses, Percentage of Collision Claims with Associated Injury Claims for 1974 and 1975 Models, March 1977.*
- I76-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974, 1985, and 1976 Models, November 1977.*
- I76-2 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974, 1975, and 1976 Models, September 1978.*
- I77-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1977 Models, September 1978.*
- I78-1 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results for 1977 and 1978 Models, September 1979.*

- I79-1 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1977, 1978, and 1979 Models, October 1980.*
- A-1 *Automobile Insurance Losses, Collision Coverages; A Comparison of Results for 1972 and 1973 Models, May 1974.*
- A-2 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Density, 1972 and 1973 Models, September 1974.*
- A-3 *Automobile Insurance Losses, Collision Coverages; A Comparison of Results for 1973, 1974 and 1975 Models, July 1975.*
- A-4 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Density, 1974 and 1975 Models, December 1975.*
- A-5 *Automobile Insurance Losses, Collision Coverages, Relationships Between Losses and Vehicle Body Style, 1974 and 1975 Models, December 1975.*
- A-6 *Automobile Insurance Losses, Collision Coverages; An Investigation of Relationships Between Losses and Engine Specifications, Using 1973 Models, June 1976.*
- A-7 *Automobile Insurance Losses, Collision Coverages; Annual Increases and Seasonal Variations, 1972, 1973, 1974 and 1975 Models, June 1976.*
- A-8 *Automobile Insurance Losses, Injury Coverages; A Preliminary Comparison of Results for Volkswagen Rabbits with Passive and Active Seat Belts, 1975 and 1976 Models, June 1977.*
- A-9 *Automobile Insurance Losses, Collision Coverages; A Comparison of Collision Claim Size Distributions for 1974, 1975, and 1976 Models, November 1977.*
- A-10 *Automobile Insurance Losses, Injury Coverages; Comparisons of Claim Frequencies of Volkswagen Rabbits with Automatic and Manual Seat Belts, 1975, 1976, and 1977 Models, June 1979.*
- A-11 *Automobile Insurance Losses, Collision Coverages; The Consistency of the Loss Experience of Specific Vehicles Produced in Several Years, 1975 to 1978 Models, June 1979.*
- A-12 *Automobile Insurance Losses, Collision Coverages; An Assessment of the Effects of the Federal Safety Bumper Standard on the Losses for 1972 Through 1978 Models, June 1980.*
- A-13 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverages; The Effects of Car Size on Crash Losses, 1977-1980 Models, May 1981.*
- A-14 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverages; Comparisons of the Loss Experience of Two- and Four-Door Cars, 1978, 1979, and 1980 Models, June 1981.*
- A-15 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverages; Relationships Between Injury and Collision Losses and Engine Options for Selected 1977-1979 Compact Cars, June 1981.*
- T79-1 *Automobile Insurance Theft Losses by Make and Series; 1979 Models, June 1980.*
- T80-1 *Automobile Insurance Theft Losses by Make and Series; 1979 and 1980 Models, April 1981.*

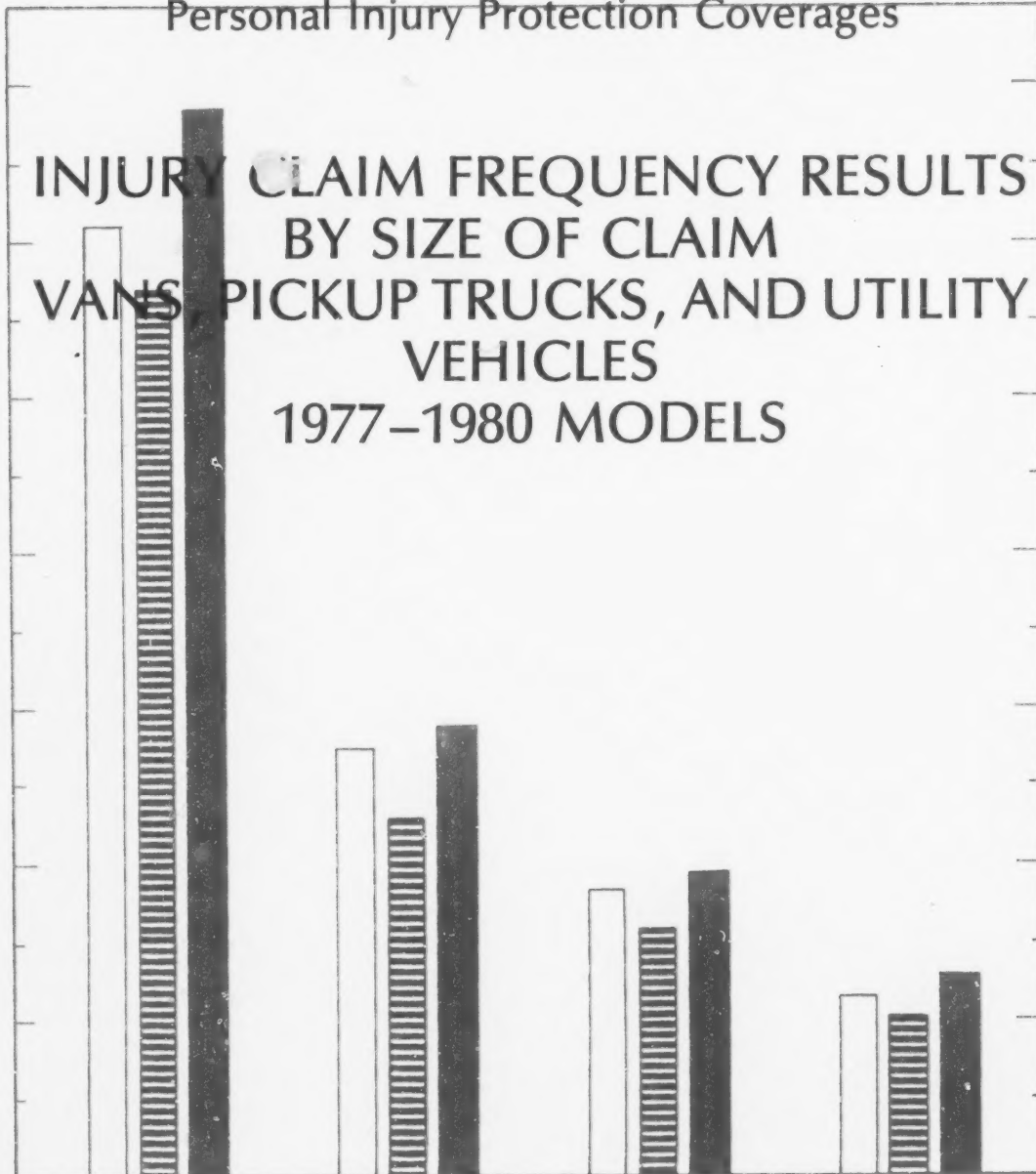
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September 1981

Automobile Insurance Losses
Personal Injury Protection Coverages

INJURY CLAIM FREQUENCY RESULTS
BY SIZE OF CLAIM
VANS, PICKUP TRUCKS, AND UTILITY
VEHICLES
1977-1980 MODELS



Highway
Loss
Data
Institute

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Personal Injury Protection Coverages**

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Research Report HLDI V80-2
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Summary

This Highway Loss Data Institute (HLDI) report presents the frequencies of insurance claims for injuries to occupants of 1977, 1978, 1979, and 1980 model year vans, pickup trucks, and utility vehicles. Claim frequency results are shown separately for all medical claims and for those claims in which the medical losses exceeded \$250, \$500, and \$1,000.

*Principal Findings**

- In all claim size categories, pickup trucks, as a group, had the lowest claim frequencies; vans had the next lowest, followed by utility vehicles and then passenger cars with the highest.
- Among the vans, the Volkswagen Kombi/Campmobile had the highest overall claim frequency and the highest frequency of claims exceeding both \$250 and \$500; all three results were almost 40 percent worse than the all-vehicle results. The Chevrolet G20 Sportvan (¾T) had the lowest claim frequency in each claim size category.
- Among the pickup trucks, the Subaru Brat had the worst results; its overall claim frequency was 72 percent worse than the all-vehicle average. The Dodge D-50 and Toyota Standard Bed pickups also had extremely poor results. The GMC C2500/K2500 (¾T) had the best results with an overall claim frequency that was 32 percent better than the all-vehicle average and frequencies for claims exceeding both \$250 and \$500 more than 40 percent better than the all-vehicle results.
- The variation in the results for utility vehicles was much greater than that for either vans or pickup trucks. The Jeep Cherokee had the lowest overall claim frequency, 22 percent better than the all-vehicle average. Both of the Jeep CJ series had extremely high claim frequencies. The Jeep CJ-5 had by far the worst results; its overall claim frequency was 122 percent worse than the all-vehicle average and the frequencies rose to three times the average for claims with medical costs exceeding \$1,000. The frequency of claims exceeding \$250, \$500, and \$1,000 for the Jeep CJ-5 were all higher than those for any other vehicle in this report and were also higher than those for any of the passenger cars reported for the same model years.

*In this report, the terms "all-vehicle results" and "all-vehicle average" refer to results for all 1977-1980 vans, pickups, and utility vehicles combined. They do include results for passenger cars.

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Introduction

The Highway Loss Data Institute (HLDI) is a non-profit, public service organization that gathers, processes, and publishes insurance data concerned with human and economic losses associated with motor vehicle use and, especially, with the ways such losses vary among different kinds of vehicles.

This report compares the frequencies of claims for injuries to occupants of 1977 through 1980 model year vans, pickup trucks, and utility vehicles. In addition to the frequency of all paid and pending claims combined, separate claim frequencies are shown for claims in which the payments exceeded certain dollar amounts — \$250, \$500, and \$1,000 — which represent progressively increased medical costs. The results are shown for individual vehicle series, and also for all vans, all pickup trucks, and all utility vehicles.

The injury claim frequencies reported are based on counts of crashes involving at least one medical claim under personal injury protection insurance coverages. A description of these first-party coverages, which principally insure against medical losses to occupants of the insured cars themselves, is given in Appendix A. The data analysis methods used in the preparation of this report are detailed in Appendix B. Definitions are given in Appendix C and a complete list of the vehicle series designations by class, make, and series appears in Appendix D. Detailed overall claim frequency results by operator age group are provided in Appendix E. The data used were supplied by ten insurers: Aetna, Allstate, GEICO, Kemper, Liberty Mutual, Nationwide, Prudential, State Farm, Travelers, and USAA.

This report is based on injury coverages and injury claims involving 1977 through 1980 models in the period from their introductions through September 1980.

Results And Discussion

This report presents injury claim frequency results for 1977-1980 model year vans, pickup trucks, and utility vehicles. The frequency of all paid and pending claims combined, and the frequencies of losses exceeding \$250, \$500, and \$1,000 are shown for those vehicles with sufficient exposure.* The results based on claims exceeding the larger medical losses indicate the frequencies with which occupant injuries of increasing severities occur in particular types of vehicles.

Each claim frequency result is presented in relative terms, with 100 representing the result for all vehicles in each claim size category. Thus, comparisons among the vehicles should be made either within a particular claim size category or by considering the sets of claim frequency results. It is important to keep in mind that the relative claim frequency results for the different claim size amounts are not directly comparable because each set of relative results is based on a different value of 100.

The actual frequency of claims decreased with increasing medical costs. The frequency of claims exceeding \$250 was approximately 40 percent of the overall frequency, the frequency of claims exceeding \$500 was less than 30 percent of the overall frequency, and the frequency of claims exceeding \$1,000 was less than 20 percent of the overall frequency.

The total dollars paid out were dramatically influenced by the more expensive claims. For example, claims exceeding \$250, while representing only 40 percent of all claims, accounted for 94 percent of the total dollars paid out. Similarly, claims exceeding \$500 accounted for 88 percent of the total dollars and claims exceeding \$1,000 accounted for 80 percent of the total dollars.

The relative injury loss experience of particular vehicles should not change substantially from model year to model year providing that the basic design of the vehicle is essentially unchanged. In view of this and because substantial amounts of exposure are needed to produce reliable injury claim frequency results, the data for model years 1977 through 1980 have been combined for those vehicles whose basic designs remained unchanged for these model years.

Table 1 summarizes the injury claim frequency results for 1977-1980 model year vans, pickups, and utility vehicles. Also shown in Table 1 are the injury results for 1977-1980 model year passenger cars†. The results are expressed in numbers of claims per 1,000 insured vehicle years of exposure.

Pickup trucks had the lowest injury claim frequency results. Their claim frequencies were approximately 70 percent of those for passenger cars. Vans had the next lowest claim frequencies, followed by utility vehicles and then passengers cars which had the highest.

*The exposure thresholds for reporting results were 5,000 insured vehicle years for the "all" results, 10,000 years for the greater than \$250 results, 15,000 years for the greater than \$500 results, and 25,000 years for the greater than \$1,000 results. The results shown in this report were standardized to remove the effects due to differences in the mix of operator age groups among the various vehicles. Standardizing for this non-vehicle factor ensures that its mix is the same for each result. It should be noted that other non-vehicle factors could vary among different vehicles and that any effects resulting from such factors have not necessarily been eliminated from the results presented in this report. The standardization procedure is described in detail in Appendix B. The unstandardized results for overall claim frequencies by operator age group are presented in Appendix E.

†The results for passenger cars differ slightly from those reported in HLDI Research Report I 80-1, "Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1978, 1979, and 1980 Models," because those reported here include results for 1977 models.

TABLE 1

PERSONAL INJURY PROTECTION COVERAGES
CLAIM FREQUENCIES BY SIZE OF CLAIM
1977-1980 MODEL YEAR VANS, PICKUPS, UTILITY VEHICLES, PASSENGER CARS

VEHICLE CLASS	CLAIMS PER 1,000 INSURED VEHICLE YEARS			
	ALL CLAIMS	CLAIMS > \$250	CLAIMS > \$500	CLAIMS > \$1,000
Vans	12.2	5.5	3.7	2.3
Pickup Trucks	11.4	4.7	3.2	2.0
Utility Vehicles	13.7	5.8	3.9	2.6
Passenger Cars	17.1	6.7	4.5	2.8

Results are standardized to the distribution:

<u>Youthful Operator</u>	<u>No Youthful Operator</u>
15%	85%

Figure 1 presents graphically the injury claim frequency results for 1977-1980 model year vans, pickups, and utility vehicles. The overall injury claim frequency for vans, pickups, and utility vehicles combined was 12.0 claims per 1,000 insured vehicle years. The combined injury claim frequency for claims exceeding \$250 was 5.1, for claims exceeding \$500 it was 3.4, and for claims exceeding \$1,000, it was 2.2. These results were based on nearly two million insured vehicle years.

Van Results

Table 2 presents the relative injury claim frequency results for all 1977-1980 model year vans with sufficient exposure. Each claim frequency is expressed in relative terms with the value 100 representing the result for all vans, pickup trucks, and utility vehicles combined for each claim size category.

The results for vans in Table 2 are ranked in increasing order of their overall relative claim frequencies. Each individual relative claim frequency result which was at least 30 percent better (a relative claim frequency of 70 or less) or 30 percent worse (a relative claim frequency of 130 or more) than the overall result in any of the claim size categories is shown in bold print.

The overall injury claim frequency for all 1977-1980 vans combined was 12.2 claims per 1,000 vehicle years of exposure and was based on a total exposure of over 400,000 years. The injury claim frequency was 5.5 for claims exceeding \$250, 3.7 for claims exceeding \$500, and 2.3 for claims greater than \$1,000. These results were slightly higher than the combined frequencies for all vehicles and this is reflected in the relative frequencies shown in the first line of Table 2, which are all greater than 100.

Table 2 lists the results for 14 vans. The Chevrolet G20 Sportvan had the lowest overall relative claim frequency (76) and also the lowest claim frequency for claims exceeding \$250, \$500, and \$1,000. The Volkswagen Kombi/Campmobile had by far the highest claim frequencies in the three categories for which it was reported. Except for one case, the larger vans had lower overall claim frequencies than their smaller counterparts.

Figure 1
Personal Injury Protection Coverages
Claim Frequencies by Size of Claim
1977-1980 Vans, Pickups, and Utility Vehicles

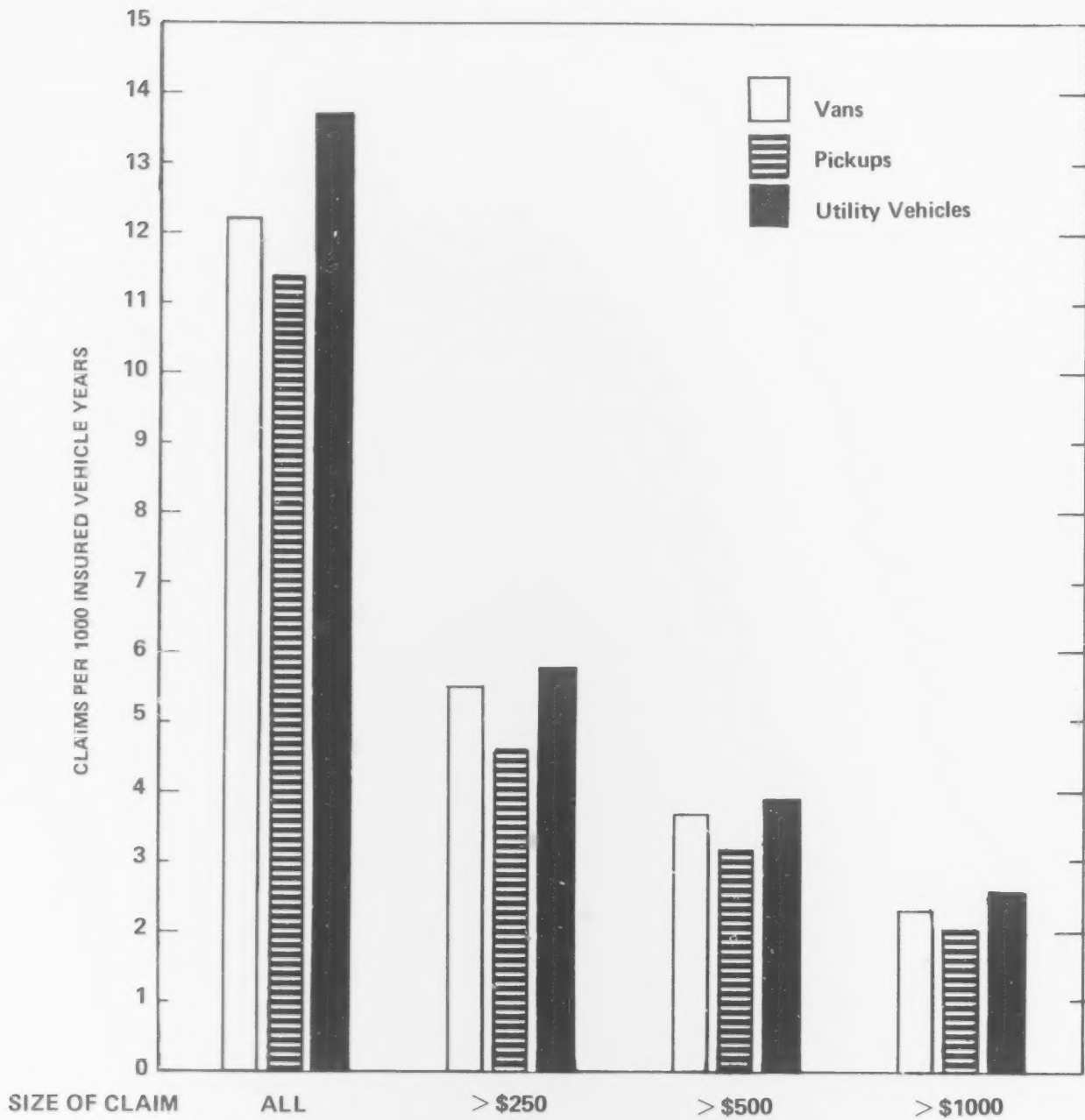


TABLE 2

**1977-1980 MODEL YEAR VANS
RELATIVE INJURY CLAIM FREQUENCIES – PERSONAL INJURY PROTECTION COVERAGES**

Model Years	Make and Series		Exposure	RELATIVE CLAIM FREQUENCIES BY SIZE OF CLAIM			
				All	>\$250	>\$500	>\$1,000
1977-1980	ALL VANS		429,151	102 =12.2	108 =5.5	109 =3.7	105 =2.3
1977-1980	Chevrolet	G20 Sportvan (¾T)	26,312	76	75	76	68
1977-1980	Plymouth	PB200 Voyager (¾T)	5,545	78			
1977-1980	GMC	G2500 Vandura (¾T)	10,619	91	86		
1977-1980	Ford	E-250 Econoline (¾T)	9,953	91			
1977-1980	Ford	E-150 Club Wagon (½-¾T)	18,188	94	106	109	
1977-1980	Ford	E-150 Econoline (½-¾T)	76,675	101	110	115	109
1977-1980	Dodge	B200 (¾T)	93,177	101	106	112	114
1977-1980	Chevrolet	G20 Chevyvan (¾T)	51,822	102	100	109	114
1977-1980	Chevrolet	G10 Sportvan (½T)	8,097	104			
1977-1980	Dodge	B100 (½T)	35,207	107	114	115	109
1977-1980	Ford	E-100 Econoline (½T)	10,359	107	92		
1977-1980	Ford	E-250 Club Wagon (¾T)	6,919	109			
1977-1980	Chevrolet	G10 Chevyvan (½T)	43,967	115	122	112	86
1977-1979	Volkswagen	Kombi/Campmobile	21,042	137	139	138	

Results are standardized to the distribution:

Minimum exposure requirements for reporting:

Youthful OperatorNo Youthful Operator

15%

85%

All claims

5,000 vehicle years

Claims > \$250

10,000 vehicle years

Claims > \$500

15,000 vehicle years

Claims > \$1,000

25,000 vehicle years

Those results at least 30 percent *above* or *below* the all-vehicle results (100) are shown in bold print.

Pickup Truck Results

Table 3 presents the relative injury claim frequency results for all 1977-1980 model year pickup trucks with sufficient exposure. Each claim frequency is expressed in relative terms with the value 100 representing the result for all vans, pickup trucks, and utility vehicles combined for each claim size category.

The results for pickup trucks in Table 3 are ranked in increasing order of their overall relative claim frequencies. Any individual relative claim frequency result that was at least 30 percent better (a relative claim frequency of 70 or less) or 30 percent worst (a relative claim frequency of 130 or more) than the overall result in any of the claim size categories is shown in bold print.

The overall injury claim frequency for all 1977-1980 pickup trucks combined was 11.4 claims per 1,000 vehicle years of exposure and was based on a total exposure of over 1.2 million years. The injury claim frequency was 4.7 for claims exceeding \$250, 3.2 for claims exceeding \$500, and 2.0 for claims

greater than \$1,000. These results were slightly lower than the results for all vehicles combined and this is reflected in the relative frequencies shown in the first line of Table 3, which are all less than 100.

Table 3 lists the results for 20 pickup trucks. The GMC C2500/K2500 had the lowest overall relative claim frequency (68), the lowest relative frequency of claims greater than \$250 (57), and the lowest relative frequency of claims greater than \$500 (56). At the other end of the scale, the Subaru Brat had the highest relative frequencies for overall (172) and for claims exceeding \$250 (157). The Dodge D-50 and Toyota Standard Bed also had claim frequencies which were considerably higher than other pickup trucks. In all cases, the $\frac{3}{4}$ ton pickups had lower overall injury claim frequencies than their $\frac{1}{2}$ ton counterparts.

TABLE 3
1977-1980 MODEL YEAR PICKUPS
RELATIVE INJURY CLAIM FREQUENCIES - PERSONAL INJURY PROTECTION COVERAGES

Model Years	Make and Series		Exposure	RELATIVE CLAIM FREQUENCIES BY SIZE OF CLAIM			
				All	> \$250	> \$500	> \$1,000
1977-1980	ALL PICKUPS		1,225,884	95 =11.4	92 =4.7	94 =3.2	91 =2.0
1977-1980	GMC	C2500/K2500 ($\frac{3}{4}$ T)	21,684	68	57	56	
1977-1980	Jeep	J10 ($\frac{1}{2}$ T)	6,463	72			
1977-1980	Chevrolet	C20/K20 ($\frac{3}{4}$ T)	83,249	73	75	79	73
1977-1980	Dodge	D200/W200 ($\frac{3}{4}$ T)	11,271	73	71		
1977-1980	GMC	C1500/K1500 ($\frac{1}{2}$ T)	53,514	83	75	74	77
1977-1980	Ford	F-250 ($\frac{3}{4}$ T)	86,718	88	88	94	95
1977-1980	Ford	F-150 ($\frac{1}{2}$ - $\frac{3}{4}$ T)	258,318	90	90	91	91
1977-1980	Chevrolet	C10/K10 ($\frac{1}{2}$ T)	271,575	92	88	88	86
1977-1980	Ford	F-100 ($\frac{1}{2}$ T)	133,465	93	96	97	91
1977-1980	Dodge	D100/W100 ($\frac{1}{2}$ T)	67,431	96	92	94	82
1977-1980	Ford	Ranchero	11,278	98	90		
1977-1980	Chevrolet	El Camino	38,269	110	98	94	95
1977-1980	Datsun	Stretch	37,787	116	122	129	123
1977-1980	Toyota	Long Bed	39,451	119	122	124	132
1979-1980	Chevrolet	Luv	14,722	121	102		
1977-1980	Datsun	Standard Bed	26,551	122	124	132	123
1979-1980	Ford	Courier	8,614	122			
1977-1980	Toyota	Standard Bed	24,342	142	151	147	
1979-1980	Dodge	D-50	7,156	151			
1978-1980	Subaru	Brat	11,187	172	157		

Results are standardized to the distribution:

Youthful Operator	No Youthful Operator
15%	85%

Minimum exposure requirements for reporting:

All claims	5,000 vehicle years
Claims > \$250	10,000 vehicle years
Claims > \$500	15,000 vehicle years
Claims > \$1,000	25,000 vehicle years

Those results at least 30 percent *above* or *below* the all-vehicle results (100) are shown in bold print.

Utility Vehicle Results

Table 4 presents the relative injury claim frequency results for all 1977-1980 model year utility vehicles with sufficient exposure. Each claim frequency is presented in relative terms with the value 100 representing the result for all vans, pickup trucks, and utility vehicles combined for each claim size category.

The results for utility vehicles in Table 4 are listed in increasing order of their overall relative claim frequency. Any individual relative claim frequency result that was at least 30 percent better (a relative claim frequency of 70 or less) or 30 percent worse (a relative claim frequency of 130 or more) than the overall result in any of the claim size categories is shown in bold print.

The overall injury claim frequency for all 1977-1980 utility vehicles combined was 13.7 claims per 1,000 vehicle years of exposure and was based on a total exposure of over 300,000 years. The injury claim frequency was 5.8 for claims exceeding \$250, 3.9 for claims greater than \$500, and 2.6 for claims greater than \$1,000. These results were substantially higher than the results for all vehicles combined and this is reflected in the relative results shown in the first line of Table 4. Two Jeep models, the CJ-5 and CJ-7, were the principal contributors to this worse than average injury loss experience.

Table 4 includes results for 11 utility vehicles. The differences between the best and worst utility vehicles are much larger than those for vans and pickup trucks. Nine of the eleven utility vehicles listed had about average or better than average results; the other two vehicles, the Jeep CJ-5 and CJ-7, had extremely poor results. The Jeep CJ-5 had by far the highest frequency of claims in all claim size categories; its results for claims exceeding \$250, \$500, and \$1,000 are higher than any other vehicle in this report and are also higher than any of the passenger cars reported for these same model years. Two utility vehicles, the International Scout Traveltop and GMC C1500/K1500 Jimmy, had only slightly better than average overall claim frequencies, but were considerably better than average when considering only the claims involving higher medical costs.

TABLE 4

**1977-1980 MODEL YEAR UTILITY VEHICLES
RELATIVE INJURY CLAIM FREQUENCIES – PERSONAL INJURY PROTECTION COVERAGES**

Model Years	Make and Series		Exposure	RELATIVE CLAIM FREQUENCIES BY SIZE OF CLAIM			
				All	> \$250	> \$500	> \$1,000
1977-1980	ALL UTILITY VEHICLES		315,592	114 =13.7	114 =5.8	115 =3.9	118 =2.6
1977-1980	Jeep	Cherokee	30,435	78	69	74	82
1977-1980	Chevrolet	C10/K10 Suburban (½T)	30,345	80	73	71	82
1977-1980	Chevrolet	C20/K20 Suburban (¾T)	8,458	80			
1977-1980	Chevrolet	C10/K10 Blazer (½T)	70,973	88	80	82	73
1977-1980	Jeep	Wagoneer	17,473	91	84	74	
1977-1980	GMC	C1500/K1500 Jimmy (½T)	12,903	93	69		
1978-1980	Ford	Bronco	35,048	94	88	85	91
1977-1980	International	Scout Traveltop/Traveler	17,080	97	76	68	
1977-1980	Dodge	AD100/AW100 Ramcharger	11,785	110	106		
1977-1980	Jeep	CJ-7	32,005	170	180	182	195
1977-1980	Jeep	CJ-5	28,892	222	255	276	300

Results are standardized to the distribution:

Youthful Operator

15%

No Youthful Operator

85%

Minimum exposure requirements for reporting:

All claims

5,000 vehicle years

Claims > \$250

10,000 vehicle years

Claims > \$500

15,000 vehicle years

Claims > \$1,000

25,000 vehicle years

Those results at least 30 percent *above* or *below* the all-vehicle results (100) are shown in bold print.

Appendix A

Specifications Of Injury Coverages

Personal Injury Protection (PIP) Coverages

Personal injury protection coverages provide first-party insurance against medical and other types of losses in "no-fault" states.

The personal injury protection coverages reported in this study were based on data from the 19 states listed below.

PERSONAL INJURY PROTECTION (PIP) COVERAGES STATES INCLUDED

Colorado	Minnesota
Connecticut	New Jersey
Delaware	New York
Florida	North Dakota
Georgia	Oregon
Hawaii	Pennsylvania
Kansas	South Carolina
Kentucky	Texas
Maryland	Utah
Michigan	

Appendix B

Method Of Data Analysis

Personal Injury Protection Coverages

Results in this report are based on "personal injury protection" (PIP) coverages which are provided in so-called no-fault states. These coverages were selected because they provide medical expense reimbursement to injured occupants of the insured vehicle.

Use of PIP insurance data to identify crashes involving injury has certain limitations because these data cannot provide information on all occupant injuries. This occurs when claims for injury costs are not made under PIP coverages because of the availability of other sources of medical expense reimbursements, such as bodily injury liability and/or health insurance coverages. Consequently, PIP claim frequencies do not include all of the crashes involving injury. This limitation should not distort comparisons among different vehicles.

Vehicle Description And Identification

The Vehicle Identification Numbers (VINs) of most new vehicles sold in the United States are individually unique numbers that contain, in coded form, detailed information as to each vehicle's make, model year, series,* and other distinguishing characteristics.

The very specific vehicle types for which results are presented in this report were derived from the VINs of the individual vehicles.

Only data with valid VINs were used for this report. Each VIN was decoded into a set of specific characteristics. For the purposes of this report, the vehicle characteristics of primary concern were make, model year, series, body style, and wheelbase.

Exposure

Exposure, in terms of insured vehicle years, was computed for each individual vehicle from the coverage data. The total number of insured vehicle years for each vehicle series was then obtained by accumulating the exposure for all of the individual vehicles of that vehicle series.

For each vehicle series, the exposure was also computed for each operator age group — youthful operators and no youthful operators.*

Claim Frequency

Both pending and paid claims for an individual vehicle were first matched with its corresponding coverage data to ensure that the crash had occurred within an appropriate period of coverage for that vehicle. In every instance in which multiple claims were made for the same crash — e.g., when more than one occupant of the car incurred medical expenses — the claims were treated as a single injury claim in the calculation of claim frequencies. It should be noted that some medical expenses can sometimes be incurred even though the occupants are not injured. This can occur, for example, when precautionary medical examinations are undertaken even though no injuries are apparent, or, in fact, found.

*See Appendix C for definitions.

All injury claims involving medical expense reimbursements were used, together with the corresponding exposure, to compute the claim frequencies in terms of the number of claims per 1,000 insured vehicle years. The overall claim frequency results were computed using both paid and pending claims. In addition to the overall claim frequency results, separate claim frequency results were computed for claims in which the medical losses exceeded \$250, \$500, and \$1,000. The latter three results provide indications of the extent to which particular cars are over- or under-involved in crashes resulting in more significant injuries. Claims involving non-medical losses only and claims settled without payments were not used. Thus, the claim frequencies represent the number of crashes per 1,000 insured vehicle years in which one or more injuries occurred resulting in medical expense claim payments under PIP insurance coverages.

Standardization

The losses for different vehicles can vary substantially in relation to certain non-vehicle factors. One important factor with which claim frequency varies is the operator age group; and the mix of operator ages can vary considerably among different vehicle types — so considerably that it could distort comparisons of results between vehicles if not taken into account.

Youthful operators have higher insurance claim frequencies than older drivers. Thus, if two vehicle types have different proportions of youthful operators, this difference, if not taken into consideration, would be sufficient to bias comparisons. To remove this effect for each vehicle type, the results for each vehicle type were weighted, using the values shown below, to produce a weighted average of the actual results for each operator age group. In this way the results for each vehicle type are based on the same mix, or distribution, of exposure for the two operator age groups.

Since the same weights are used for each vehicle type, the effects due to operator age group are present in equal amounts in the standardized results for each vehicle type. Therefore, to the extent that the age distributions within operator age group do not vary substantially for different vehicles, these effects can no longer bias comparisons among vehicles.

This standardization procedure is widely used in vital health statistics.* The basic principle of this standardization procedure is the introduction of a standard distribution of exposure for the different operator age groups.

OPERATOR AGE GROUP WEIGHTS

Youthful Operator	No Youthful Operator	Combined
0.15	0.85	1.0

Exposure Threshold For Reporting Results

A threshold of 5,000 insured vehicle years of exposure was selected for reporting the overall claim frequency results for vehicle size classes, subgroups, and individual vehicle series. Consequently, no results are presented in this report for any of the vehicle series with smaller amounts of exposure. In addition, different thresholds were used to determine whether the claim frequency results for medical losses exceeding the specified dollar amounts were published. In order for the claim frequency results for medical losses

*For example, see Armitage, P., *Statistical Methods in Medical Research*, Wiley, New York, 1971.

exceeding \$250 to be published, at least 10,000 insured years of exposure were required; for medical losses of greater than \$500, the minimum exposure was 15,000; and for medical losses exceeding \$1,000, the minimum exposure was 25,000 insured vehicle years.

It should be kept in mind that, in general, the greater the exposure associated with a reported claim frequency, the more confidence can be placed in it.

Appendix C

Definitions

Claim Frequency – The number of claims for a group of vehicles, divided by the exposure for that group; expressed as claims per one thousand insured vehicle years.

Exposure – The time interval an individual vehicle is insured. Exposure for a group of vehicles is expressed in units of insured vehicle years.

First-Party Coverage – An insurance coverage under which the policyholder collects compensation for his losses from his own insurer regardless of fault.

No-Fault Auto Insurance – An auto insurance plan in which each driver/owner accepts financial responsibility for some or all losses sustained by himself, pedestrians hit by him, and occupants of his own vehicle in return for which he enjoys some immunity from liability for losses to third-party persons.

Operator Age Group – The factor distinguishing between those vehicles whose rated driver is youthful and those vehicles whose rated driver is not youthful (see *Youthful Operator*).

Personal Injury Protection (PIP) Coverage – First-party no-fault coverage in which an insurer pays, within the specified limits, the medical, hospital, and other expenses of the insured, others in his vehicle, and pedestrians struck by him.

Rated Driver – The driver who, for insurance purposes, is considered to represent the greatest loss potential for the insured automobile.

Vehicle Identification Number (VIN) – A code, variously comprising both numbers and letters; normally 8 to 15 characters in length, assigned to each automobile by its manufacturer. The VIN uniquely identifies the vehicle within at least a ten-year time span and, in recent model year vehicles, almost always contains coding which identifies the make, series, model year and other characteristics of each vehicle.

Vehicle Series – A name denoting a family of vehicles, within a make, with the same wheelbase and a degree of commonality in construction such as body, chassis, etc. (See Appendix D.)

Youthful Operator – For the purposes of this report, all males (married or single) under 25 years of age and all unmarried females under 25 years of age.

Appendix D

Vehicle Series Designations — 1977-1980 Models

This report used the following definitions for 1977-1980 model year vans, pickups, and utility vehicles:

Vans — Fully enclosed vehicles with either no hood or a very short hood in which the engine is placed at least 50 percent behind the windshield. The driver's position is usually well forward, nearly beside the engine, usually within the forward 25% of the wheelbase. These vehicles are designed for cargo transport and are equipped with a right side cargo access door and rear doors. The cargo area is not separated from the passenger area — both are enclosed under the same roof. Some passenger vans are equipped with additional seats in the cargo area and usually have additional side windows also.

Pickups — Cargo carrying vehicles, usually on a truck chassis, with an enclosed cab and a separate open cargo area. The open cargo area generally is a box with raised sides with an opening tailgate. There are also a small number of auto pickups which are similar to regular pickups except that they are built on a passenger car chassis.

Utility Vehicles — Vehicles built on heavy duty chassis capable of off road use. They are of conventional construction with the driver located behind the engine. The cargo and passenger areas are integral with the driver area. Many of these vehicles are equipped with soft or removable tops. Frequently, these vehicles are equipped with four-wheel drive.

Vehicles of 1-ton rating and above generally equipped with dual rear wheels have been excluded because they are primarily not utilized as private passenger vehicles.

TABLE D
VEHICLE SERIES DESIGNATIONS
1977-1980 MODELS

VEHICLE CLASS MAKE SERIES			VEHICLE CLASS MAKE SERIES		
VANS	Chevrolet	G10 Chevyvan (½T)	PICKUPS (cont'd)	Internat'l Harvester	Terra ⁵
		G20 Chevyvan (¾T)			
		G10 Sportvan (½T)		Jeep/AMC	J10 (½T)
		G20 Sportvan (¾T)			J20 (½-¾T)
	Dodge	B100 (½T)		Mazda	Long Bed ⁴
		B200 (¾T)			Standard Bed ⁴
	Ford	E-100 Club Wagon (½T)		Plymouth	Arrow ⁵
		E-150 Club Wagon (½-¾T)			
		E-250 Club Wagon (¾T)		Subaru	Brat ⁴
		E-100 Econoline (½T)			
		E-150 Econoline (½-¾T)		Toyota	Long Bed
		E-250 Econoline (¾T)			Standard Bed
GMC	G1500 Rally Wagon (½T)	UTILITY VEHICLES	Chevrolet	C10/K10 Blazer (½T)	
	G2500 Rally Wagon (¾T)			C10/K10 Suburban (½T)	
	G1500 Vandura (½T)			C20/K20 Suburban (¾T)	
	G2500 Vandura (¾T)		Dodge	AD100/AW100 Ramcharger	
Plymouth	PB100 Voyager (½T)				
	PB200 Voyager (¾T)		Ford	Bronco (wheelbase = 92 in.) ¹	
Volkswagen	Kombi/Campmobile ³			Bronco (wheelbase = 104 in.) ⁴	
	Vanagon ²		GMC	C1500/K1500 Jimmy (½T)	
PICKUPS	Chevrolet			C10/K10 (½T)	C1500/K1500 Suburban (½T)
				C20/K20 (¾T)	C2500/K2500 Suburban (¾T)
			El Camino		
			Luv ⁵	Internat'l Harvester	Scout Traveltop/Traveler
Datsun	Standard Bed	Jeep AMC	Cherokee		
	Stretch		CJ-5		
Dodge	D-50 ⁵		CJ-7		
	D100/W100 (½T)	Plymouth	Wagoneer		
	D200/W200 (¾T)		PD100/PW100 Trailduster		
Ford	Courier ⁵	Toyota	Land Cruiser		
	F-100 (½T)		Land Cruiser S/W ³		
	F-150 (½-¾T)				
	F-250 (¾T)				
	Ranchero ³				
GMC	C1500/K1500 (½T)				
	C2500/K2500 (¾T)				
	Sprint ¹				

¹1977 Models Only
²1980 Models Only

³1977-1979 Models Only
⁴1978-1980 Models Only
⁵1979-1980 Models Only

¹ 1977 Models Only² 1980 Models Only³ 1977-1979 Models Only⁴ 1978-1980 Models Only⁵ 1979-1980 Models Only

Appendix E

TABLE E
OVERALL CLAIM FREQUENCY DETAILS BY MAKE & SERIES AND OPERATOR AGE GROUP
PERSONAL INJURY PROTECTION COVERAGES 1977-1980 MODELS

PART A: VANS

MODEL YEARS	MAKE	SERIES	YOUTHFUL OPERATOR			NO YOUTHFUL OPERATOR			CLAIM FREQUENCY	
			EXPOSURE	CLAIMS	FREQ	EXPOSURE	CLAIMS	FREQ	COMB	STD
77-80	ALL	VANS	42126	788	18.7	387024	4327	11.2	11.9	12.3
77-80	CHEVROLET	G20 SPORTVAN (3/4T)	1317	16	12.1	24995	214	8.6	8.7	9.1
77-80	PLYMOUTH	PB200 VOYAGER (3/4T)	279	2	7.2	5266	51	9.7	9.6	9.3
77-80	GMC	G2500 VANDURA (3/4T)	801	18	22.5	9817	87	8.9	9.9	10.9
77-80	FORD	E-250 ECONOLINE (3/4T)	720	14	19.5	9233	87	9.4	10.1	10.9
77-80	FORD	E-150 CLUB WAGON (1/2-3/4T)	781	12	15.4	17407	184	10.6	10.8	11.3
77-80	FORD	E-150 ECONOLINE (1/2-3/4T)	7354	125	17.0	69321	775	11.2	11.7	12.1
77-80	DODGE	B200 (3/4T)	9222	160	17.3	83955	941	11.2	11.8	12.1
77-80	CHEVROLET	G20 CHEVYVAN (3/4T)	5027	103	20.5	46794	500	10.7	11.6	12.2
77-80	CHEVROLET	G10 SPORTVAN (1/2T)	555	7	12.6	7541	94	12.5	12.5	12.5
77-80	DODGE	B100 (1/2T)	5316	107	20.1	29891	345	11.5	12.8	12.8
77-80	FORD	E-100 ECONOLINE (1/2T)	1398	28	20.0	8961	104	11.6	12.7	12.9
77-80	FORD	E-250 CLUB WAGON (3/4T)	345	10	29.0	6574	68	10.3	11.3	13.1
77-80	CHEVROLET	G10 CHEVYVAN (1/2T)	7067	138	19.5	36900	473	12.8	13.9	13.8
77-79	VOLKSWAGEN	KOMBI/CAMPMOBILE	1038	28	27.0	20003	290	14.5	15.1	16.4

(See footnotes on page 23)

TABLE E
OVERALL CLAIM FREQUENCY DETAILS BY MAKE & SERIES AND OPERATOR AGE GROUP
PERSONAL INJURY PROTECTION COVERAGES 1977-1980 MODELS

FART B: PICKUPS

MODEL YEARS	MAKE	SERIES	YOUTHFUL OPERATOR			NO YOUTHFUL OPERATOR			CLAIM FREQUENCY	
			EXPOSURE	CLAIMS	FREQ	EXPOSURE	CLAIMS	FREQ	COMB	STD
77-80	ALL	PICKUPS	162888	3174	19.5	1062996	10607	10.0	11.2	11.4
77-80	GMC	C2500/K2500 (3/4T)	2113	26	12.3	19571	143	7.3	7.8	8.1
77-80	JEEP	J10 (1/2T)	1076	15	13.9	5388	41	7.6	8.7	8.6
77-80	CHEVROLET	C20/K20 (3/4T)	9029	135	15.0	74220	566	7.6	8.4	8.7
77-80	DODGE	D200/W200 (3/4T)	805	5	6.2	10465	97	9.3	9.1	8.8
77-80	GMC	C1500/K1500 (1/2T)	7781	125	16.1	45733	408	8.9	10.0	10.0
77-80	FORD	F-250 (3/4T)	10073	156	15.5	76645	738	9.6	10.3	10.5
77-80	FORD	F-150 (1/2-3/4T)	33504	615	18.4	224814	2118	9.4	10.6	10.8
77-80	CHEVROLET	C10/K10 (1/2T)	40072	747	18.6	231503	2243	9.7	11.0	11.0
77-80	FORD	F-100 (1/2T)	16738	317	18.9	116727	1150	9.9	11.0	11.2
77-80	DODGE	D100/W100 (1/2T)	8707	158	18.1	58723	609	10.4	11.4	11.5
77-79	FORD	RANCHERO	1215	26	21.4	10063	100	9.9	11.2	11.7
77-80	CHEVROLET	EL CAMINO	4049	87	21.5	34221	401	11.7	12.8	13.2
77-80	DATSUN	STRETCH	4686	109	23.3	33100	406	12.3	13.6	13.9
77-80	TOYOTA	LONG BED	4565	112	24.5	34886	437	12.5	13.9	14.3
79-80	CHEVROLET	LUV	2767	83	30.0	11955	140	11.7	15.1	14.5
77-80	DATSUN	STANDARD BED	4614	119	25.8	21938	277	12.6	14.9	14.6
79-80	FORD	COURIER	1058	32	30.3	7556	90	11.9	14.2	14.7
77-80	TOYOTA	STANDARD BED	4819	155	32.2	19523	279	14.3	17.8	17.0
79-80	DODGE	D-50	1000	33	33.0	6155	95	15.4	17.9	18.1
78-80	SUBARU	BRAT	2725	84	30.8	8461	159	18.8	21.7	20.6

(See footnotes on page 23)

TABLE E
OVERALL CLAIM FREQUENCY DETAILS BY MAKE & SERIES AND OPERATOR AGE GROUP
PERSONAL INJURY PROTECTION COVERAGES 1977-1980 MODELS

PART C: UTILITY VEHICLES

MODEL YEARS	MAKE	SERIES	YOUTHFUL OPERATOR			NO YOUTHFUL OPERATOR			CLAIM FREQUENCY	
			EXPOSURE	CLAIMS	FREQ	EXPOSURE	CLAIMS	FREQ	COMB	STD
77-80	ALL	UTILITY VEHICLES	39674	1018	25.7	275917	3204	11.6	13.4	13.7
77-80	JEEP	CHEROKEE	2130	24	11.3	28305	257	9.1	9.2	9.4
77-80	CHEVROLET	C10/K10 SUBURBAN (1/2T)	1597	15	9.4	28748	277	9.6	9.6	9.6
77-80	CHEVROLET	C20/K20 SUBURBAN (3/4T)	341	4	11.7	8117	75	9.2	9.3	9.6
77-80	CHEVROLET	C10/K10 BLAZER (1/2T)	8517	161	18.9	62456	571	9.1	10.3	10.6
77-80	JEEP	WAGONEER	975	19	19.5	16497	154	9.3	9.9	10.9
77-80	GMC	C1500/K1500 JIMMY (1/2T)	1500	24	16.0	11403	117	10.3	10.9	11.1
78-80	FORD	BRONCO	4688	81	17.3	30360	311	10.2	11.2	11.3
77-80	INTERNATIONAL	SCOUT TRAVELTOP/TRAVELER	1411	19	13.5	15669	178	11.4	11.5	11.7
77-80	DODGE	AD100/AW100 RAMCHARGER	1548	30	19.4	10237	124	12.1	13.1	13.2
77-80	JEEP	CJ-7	6264	202	32.2	25741	471	18.3	21.0	20.4
77-80	JEEP	CJ-5	8444	394	46.7	20448	473	23.1	30.0	26.7

FOOTNOTES FOR TABLE E

RESULTS ARE STANDARDIZED TO THE DISTRIBUTION:

YOUTHFUL OPERATOR 15%
NO YOUTHFUL OPERATOR 85%

MINIMUM EXPOSURE REQUIREMENTS FOR REPORTING:

ALL CLAIMS - 5,000 VEHICLE YEARS
CLAIMS > \$250 - 10,000 VEHICLE YEARS
CLAIMS > \$500 - 15,000 VEHICLE YEARS
CLAIMS > \$1000 - 25,000 VEHICLE YEARS

List Of Publications

Other research reports published by the Highway Loss Data Institute are:

- R72-1 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1972 Models, June 1973.*
- R73-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1973 Models Compared with 1972 Models, September 1973.*
- R73-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models, March 1974.*
- R73-3 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models During Their First Two Years, December 1974.*
- R73-4 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models, During Their First Three Years, December 1975.*
- R74-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1974 Models, May 1974.*
- R74-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1974 Models During Their First Year, December 1974.*
- R74-3 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1974 Models During Their First Two Years, December 1975.*
- R75-1 *Automobile Insurance Losses, Collision Coverages, Initial Results for 1975 Models, July 1975.*
- R75-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1975 Models During Their First Year, December 1975.*
- R76-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1976 Models, June 1976.*
- R76-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1976 Models During Their First Year, 1975 Models During Their First Two Years, 1974 Models During Their First Three Years, December 1976.*
- R77-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1977 Models, June 1977.*
- R77-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1977 Models During Their First Year, 1976 Models During Their First Two Years, 1975 Models During Their First Three Years, December 1977.*
- R78-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1978 Models, June 1978.*
- R78-2 *Automobile Insurance Losses, Collision Coverages, Variations by Make and Series, 1978 Models During Their First Year, 1977 Models During Their First Two Years, 1976 Models During Their First Three Years, January 1979.*
- R79-1 *Automobile Insurance Losses, Collision Coverages, Initial Results for 1979 Models, June 1979.*

- R79-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1979 Models During Their First Year, 1978 Models During Their First Two Years, 1977 Models During Their First Three Years, December 1979.*
- R80-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1980 Models, June 1980.*
- R80-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1980 Models During Their First Year, 1979 Models During Their First Two Years, 1979 Models During Their First Three Years, December 1980.*
- R81-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1981 Models, July 1981.*
- V78-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups and Utility Vehicles, 1978 Models During Their First Year, 1977 Models During Their First Two Years, February 1979.*
- V79-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups and Utility Vehicles, 1979 Models During Their First Year, 1978 Models During Their First Two Years, April 1980.*
- V79-2 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1977, 1978, and 1979 Vans, Pickup Trucks, and Utility Vehicles, October 1980.*
- V79-3 *Insurance Theft Losses; Vans, Pickups, and Utility Vehicles, 1979 Models, May 1981.*
- V80-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups, and Utility Vehicles, 1980 Models During Their First Year, 1979 Models During Their First Two Years, 1978 Models During Their First Three Years, December 1980.*
- I75-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974 and 1975 Models, June 1976.*
- I75-2 *Automobile Insurance Losses, Percentage of Collision Claims with Associated Injury Claims for 1974 and 1975 Models, March 1977.*
- I76-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974, 1975, and 1976 Models, November 1977.*
- I76-2 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974, 1975, and 1976 Models, September 1978.*
- I77-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1977 Models, September 1978.*
- I78-1 *Automobile Insurance Losses, Personal Injury Protection Coverages, Claim Frequency Results for 1977 and 1978 Models, September 1979.*
- I79-1 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1977, 1978, and 1979 Models, October 1980.*
- I80-1 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1978, 1979, and 1980 Models, September 1981.*

- A-1 *Automobile Insurance Losses, Collision Coverages; A Comparison of Results for 1972 and 1975 Models, May 1974.*
- A-2 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Density, 1972 and 1973 Models, September 1974.*
- A-3 *Automobile Insurance Losses, Collision Coverages; A Comparison of Results for 1973, 1974 and 1975 Models, July 1975.*
- A-4 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Density, 1974 and 1975 Models, December 1975.*
- A-5 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Body Style, 1974 and 1975 Models, December 1975.*
- A-6 *Automobile Insurance Losses, Collision Coverages; An Investigation of Relationships Between Losses and Engine Specifications, Using 1973 Models, June 1976.*
- A-7 *Automobile Insurance Losses, Collision Coverages; Annual Increases and Seasonal Variations, 1972, 1973, 1974 and 1975 Models, June 1976.*
- A-8 *Automobile Insurance Losses, Injury Coverages; A Preliminary Comparison of Results for Volkswagen Rabbits with Passive and Active Seat Belts, 1975 and 1976 Models, June 1977.*
- A-9 *Automobile Insurance Losses, Collision Coverages; A Comparison of Collision Claim Size Distributions for 1974, 1975, and 1976 Models, November 1977.*
- A-10 *Automobile Insurance Losses, Injury Coverages; Comparisons of Claim Frequencies of Volkswagen Rabbits with Automatic and Manual Seat Belts, 1975, 1976, and 1977 Models, June 1979.*
- A-11 *Automobile Insurance Losses, Collision Coverages; The Consistency of the Loss Experience of Specific Vehicles Produced in Several Years, 1975 to 1978 Models, June 1979.*
- A-12 *Automobile Insurance Losses, Collision Coverages; An Assessment of the Effects of the Federal Safety Bumper Standard on the Losses for 1972 Through 1978 Models, June 1980.*
- A-13 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverages; The Effects of Car Size on Crash Losses, 1977-1980 Models, May 1981.*
- A-14 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverages; Comparisons of the Loss Experience of Two- and Four-Door Cars, 1978, 1979, and 1980 Models, June 1981.*
- A-15 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverages; Relationships Between Injury and Collision Losses and Engine Options for Selected 1977-1979 Compact Cars, June 1981.*
- T79-1 *Automobile Insurance Theft Losses by Make and Series; 1979 Models, June 1980.*
- T80-1 *Automobile Insurance Theft Losses by Make and Series; 1979 and 1980 Models, April 1981.*